Volume 3
Issue 9

RISC USER

SEPTEMBER 1990
Price £1.60

- Background Text Printer
- Wimp Message Monitor
- Arc/IBM Disc Management
- Star XB24 Printer Reviewed

Poster from 4mation

The magazine and support group exclusively for users of the Archimedes

ISSUE 9
VOLUME 3
SEPTEMBER 1990

CONTENTS

FEATURES

News	4
Escape Break and Reset	17
Into the ARC: Printer Drivers	21
Introducing C (Part 3)	37
Points Arising	41
Assembler Workshop: Module-Based Desktop Applications	43
Bulletin Boards	53
Mastering the Wimp (Part 11): Menus concluded	55
Hints & Tips	64
Technical Queries	67
Postbag	69

UTILITIES AND APPLICATIONS

Background Text Printer	11
A Wimp Message Monitor	27
ARC/IBM Disc Management	61

REVIEWS

Poster from 4mation	7
ARCade	33
Morley Analogue/User Port Expansion Card	49
Star XB24 printer	50

RISC USER

THE ARCHIMEDES MAGAZINE AND SUPPORT GROUP

RISC User is published by BEEBUG Ltd.

Co-Editors:
Dr Lee Calcraft, Mike Williams
Assistant Editor: Kristina Lucas
Technical Editor: Alan Wrigley
Technical Assistant: Glynn Clements
Production Assistant: Sheila Stoneman
Advertising: Sarah Shrive

All rights reserved. No part of this publication may be reproduced without prior written permission of the Publisher.
The Publisher cannot accept any responsibility whatsoever for errors in articles, programs, or advertisements published. The opinions expressed on the pages of this journal are those of the authors and do not necessarily represent those of the Publisher, BEEBUG Limited.

BEEBUG Ltd © 1990

BEEBUG, 117 Hatfield Road, St. Albans, Herts AL1 4JS.
Tel: St. Albans (0727) 40303.
Fax: (0727) 60263

Printed by Arlon Printers

EDITORIAL

COPYRIGHT

Even though there is a clear copyright declaration on the first page of RISC User magazine, and in the REM lines of all programs published in the magazine and on the magazine disc, copies of RISC User programs have appeared without permission on a number of bulletin boards.

A great deal of effort goes into the production of RISC User programs, whether they are from outside contributors, or from our own staff. Even after a working program has been written it goes through an extensive testing procedure designed to ensure that what the end user receives is of the highest standard. There is no question of such programs becoming public domain, and their copyright should be honoured in the same way as any other commercial program, as provided by English law. If any member of the public (whether a RISC User member or not) wishes to distribute programs or parts of programs bearing the RISC User/BEEBUG copyright, he should write for permission to the Editor, at the Editorial address.

CONTRIBUTIONS

We are always grateful for contributions to the magazine, and we would particularly appreciate receiving more Hints and Tips. But if you are sending us a disc, ***please*** *also include brief accompanying notes on paper. This should include your name, address and membership number, the name of your program, and a brief description of what it does, together with the names of all relevant files. Finally, if you are including a text file, please tell us what type of file it is - whether ASCII, Pipedream, Ovation or whatever. Thank you for your continuing support.*

L.G.C.

• News • News • News • News •

SHOW BUSINESS

Acorn is to have a major presence at the 1990 *Computer Shopper Show*, to be held at Wembley from 6th to 9th December 1990. The 1989 show was a huge success and it is expected that many third party suppliers of software and hardware for Acorn computers will also be present. Beebug will of course be there.

Another *All Formats Computer Fair* will be held on 1st and 2nd September 1990 at the Westminster Exhibition Centre (New Horticultural Hall). Software, peripherals, consumables and spare parts for every conceivable computer will be on sale, at a fraction of their retail prices. The organisers are hoping to attract a significant number of visitors from Europe, who are otherwise unable to obtain such bargains.

Probably the largest Acorn user group outside the UK is Holland's *Big Ben Club*, which will be holding its annual Open Day on 20th October 1990. Previous open days (this is the club's 8th) have been highly successful and have been well supported by British companies. For more information, contact Big Ben Club, c/o Harry A Linsen, Gommerskepel 24, 2151 RA Nieuw-Vennep, Netherlands.

The major show for Archimedes enthusiasts is, of course, the *BBC Acorn User Show*, also at the Westminster Exhibition Centre, from 7th to 9th September 1990. Large and small companies in the Acorn world will be there, and daily seminars will be held on topics of interest to users. BEEBUG will be devoting a substantial part of its stand to demonstrations of its software, including Ovation, its impressive new DTP package.

If you live in the West Country, you may be interested to know that one of our readers is arranging a coach trip to the show on Saturday 8th September, leaving Plymouth at 5.00am and stopping if necessary at Exeter at 6.00am. If you are interested, contact David Heath on (0752) 781286.

HOT LINKS

Colton Software has been collaborating with other software houses to produce "Hot Link" software. Applications will communicate directly in real time so that data from one can automatically update the display in another. The first two packages to have this feature are *HotLink Presenter*, a new version of Lingenuity's *Presenter II*, and Minerva's *GraphBox*. These applications can now receive a continuous stream of numerical information from *PipeDream 3* (and any other software in the future with this feature built in), and display the data graphically in real time. *HotLink Presenter* costs £57.45 inc. VAT, with upgrades available for existing *Presenter* and *Presenter II* users. Details can be obtained from Lingenuity, Wood Farm, Linstead Magna, Halesworth, Suffolk IP19 0DU, tel. (0986) 85477. *GraphBox* is still priced at £79.95 inc. VAT, with an upgrade for existing users at £11.50 inc. VAT. Minerva's address is Minerva House, Baring Crescent, Exeter EX1 1TL, tel. (0392) 437756.

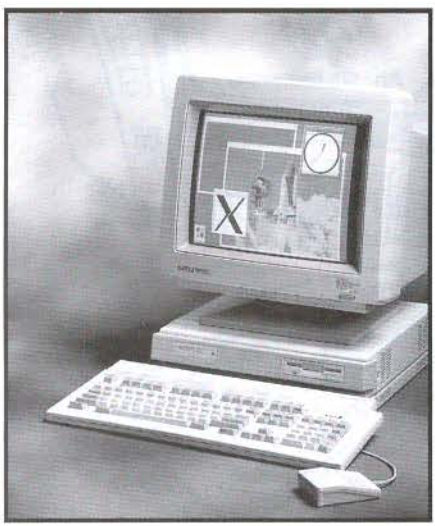
NEW UNIX WORKSTATIONS

Acorn has announced a new range of Unix workstations, based on the ARM3 processor, and designated the R200 series. The R225, costing £3450 inc. VAT, has 4 Mbytes of RAM, expandable to 8 Mbytes. The R260, which starts at £5750 inc. VAT, has 8 Mbytes expandable to 16 Mbytes, and a 100 Mbyte internal SCSI hard disc drive.

Both machines have a 4Kbyte embedded cache. They support VGA and Super VGA colour modes and high resolution monochrome, and also Ethernet, and have an internal SCSI interface. The RISC iX operating system is, of course, provided, together with some powerful software applications including X Windows and PC emulation. A wide range of software is also available from software houses both large and small, including graphics and business applications.

The new machines re-enforce Acorn's commitment to Unix, and the company hopes to increase its presence in markets

such as healthcare, image processing and higher education. Further details of these and other Acorn products can be obtained from Acorn Computers Ltd, Fulbourn Road, Cherry Hinton, Cambridge CB1 4JN, tel. (0223) 245200.



Acorn's new R260 Unix workstation

JETSTREAM HAS IT TAPED

Digital Services Ltd. has launched a new tape streamer for the Archimedes, called *Jetstream*. Designed to match the Arc in appearance, the streamer features a friendly Desktop user interface and an operational speed of 1.5Mb per minute. Each tape has a capacity of 30Mb using standard 1/4" cartridges. The unit employs sophisticated error correction techniques, and individual files, directories or entire discs may be archived or restored. The price of £688.85 inc.VAT includes an external floppy podule. For further details, contact Digital Services Ltd, 9 Wayte Street, Cosham, Portsmouth PO6 3BS, tel. (0705) 210600/324934.

DESKTOP OFFICE

Also from Minerva comes an integrated suite of programs entitled *DeskTop Office*. This multi-tasking suite contains a database, word processor, spreadsheet, graphics package and a communications program. Data can be transferred between the programs. Other features include large on-screen print within the word processor, making it suitable for use with young children. DeskTop Office costs £129.95 inc. VAT, with a special introductory educational price of £99.95 inc. VAT.

FONT NEWS

Electronic Font Foundry has announced that, following agreement with Adobe Systems B.V. Europe, its fonts will in future be 100% PostScript compatible. It will take a little time to convert all the fonts to PostScript metrics, but existing users of EFF fonts will be able to exchange them for PostScript versions free of charge. EFF can be contacted at Bridge House, 18 Brockenhurst Road, Ascot SL5 9DL, tel. (0990) 28698.

SNIP IT AND JIGGLE IT

New from 4Mation are two more programs aimed primarily at the educational market. Snippet allows you to freeze a screen while a program is running and save all or part of it as a sprite file. It will also convert BBC screens to Arc sprites, create montages from separate sprites, and manipulate sprites by adding borders and captions and creating special effects. *Jiglet* is a version of *Jigsaw* (reviewed in RISC User Volume 3 Issue 3) which has been specially designed for younger users. Any picture can be used with the program, which will cut it into 4, 6, 9 or 12 shaped pieces.

Snippet and *Jiglet* are each priced at £33.35 inc. VAT, with no additional site licence fee required. For further details contact 4Mation Educational Resources, Linden Lea, Rock Park, Barnstaple, Devon EX32 9AQ, tel. (0271) 45566.

FOOTNOTE

Please note that the telephone number given for Midnight Graphics in the news pages of the last issue was incorrect. The correct number should be 061-766 8423. RU

Make a Date in Your Diary For the

*New Products
*Old Favourites
*Workshops
*Seminars
*Demonstrations
*Daily Competitions
*Free Draws
*Fabulous Prizes

Find us close to Victoria Station at
The Westminster Exhibition Centre
(Horticultural Hall)
Elverton Street, London SW1

Friday 7th Sept ....12 noon to 7.00pm
Saturday 8th .....10am to 6.00pm
Sunday 9th .....10am to 6.00pm

In association with
BBC ACORN USER
MAGAZINE

Complete Range of BBC ACORN Hardware and Software

BOOK NOW, SAVE MONEY

For advance tickets fill in the coupon below and send with remittance to:-
SAFESELL EXHIBITIONS
Market House, Cross Road, Tadworth, Surrey KT20 5SR

Advance tickets:- Adults £3.50 Under 16's £2.50 At the door:- Adults £4.00 Under 16's £3.00
Please send ..... Adult tickets at £3.50 each. Please send ..... Under 16's tickets at £2.50 each
I enclose cheque / P.O. for £..... Payable to **Safesell Exhibitions Ltd.**

DON'T SEND CASH !!

PLEASE ENCLOSE A STAMPED ADDRESSED ENVELOPE

Poster from 4mation

Reviewed by Mike Williams

4mation is rapidly establishing itself as the originator of high quality innovative software for the Archimedes range aimed primarily at the educational market. Examples include the highly addictive *Jigsaw* and the more recent *Craftshop* series. However, software of this kind is too good to be restricted solely to the classroom, and 4mation's latest offering Poster is no exception.

At its simplest, Poster is a package which allows the user to create text messages which can be shaped, distorted and moulded in almost infinite variety. Unlike most DTP packages, Poster imposes few constraints on the way in which text can be manipulated. It thus provides the means of creating eye-catching posters, displays, notices, forms, and much more. Moreover, it makes an ideal adjunct to any full-blown DTP package allowing the results of Poster to be imported into any DTP document.

You might wonder if Poster might not be used as a DTP package in its own right. Well to some extent it can, but you should note that Poster is essentially concerned with the design and layout of a single page (albeit as big as B0 in size - 1000mm by 1414mm), and does not provide all the finesse of page-based operations available from good DTP software.

Not only does 4mation produce excellent software but its packaging and presentation are also first rate. Poster is supplied in a smart, glossy blue wallet folder containing three discs, the A5 sized manual of some 100 pages, nine pages of Poster worksheets, and sundry other promotional literature, itself a demonstration of Poster's power and capability.

The software is fully RISC OS compatible, I'm pleased to say, and is readily installed on your system (with extensive instructions covering differing requirements). It appears to run quite happily in a 1Mbyte machine, but this doesn't leave much over (if any) for other applications such as Draw and Paint which you are sure to need.

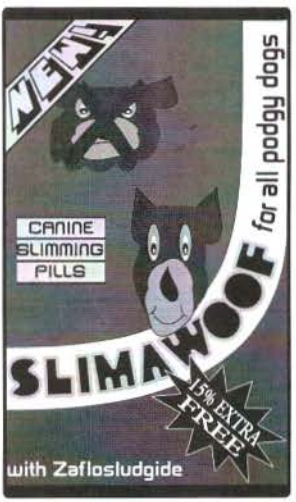
Poster has many similarities with Draw; it is object based with nine different object types; once selected an object is surrounded by a box with rotate and scaling 'ears', and other markers to indicate the type of object. Saved Poster files conform to Acorn's Draw file format. The Poster manual claims other applications are not strictly compatible, and so Poster can also save files in an alternative Draw file format compatible with other software.

In use, clicking on the Poster icon on the icon bar creates an empty window. Pressing the Menu button over this window brings up the main menu of nine options. From here you can determine the size of the 'poster' you want to work with, pre-set sizes from A5 to A0, or any size of your own. Larger sizes are printed on more than one sheet of paper with trim or overlap marks for guidance as selected by the user. A grid can be superimposed over the drawing area, and additional windows can be opened and scaled on the same document.

As stated, 'ears' on the surrounding box of selected objects can be used to re-scale or

rotate an object. Objects can also be moved and copied. There is a comprehensive styling option which covers details such as choice of fill, text and line colour, line width, line pattern and similar details. As well as appearing as individual items within the style sub-menu, it is also possible to select a style box within which all these characteristics can be readily examined and modified as required.

A whole library of *borders* is supplied on disc, and you can create your own (but using the Draw application, not Poster). A border is initially placed around a selected object, but can then be moved, re-scaled and re-styled as required. The original object and the surrounding border can also be *grouped* so that both may be manipulated together, or the original object and its border can be selected separately.



A key feature in the use of Poster is the concept of a mould. A mould consists of two or four path objects which can be used to mould or shape both text and other objects (but not sprites). Effectively, a mould provides boundaries for the distortion of an object. Again, a large library of moulds is supplied as part of Poster, or you can construct your own (again, as with borders, using the Draw application), and then after importing into Poster using the *Make a mould* facility.

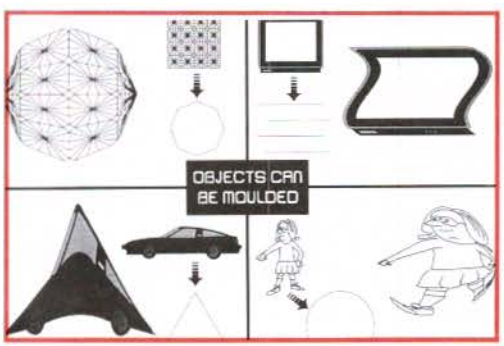
Since it is the function of Poster to mould, shape and style text, the facilities for text handling form quite a large part of the package. There are in fact four different categories of text within Poster: *Normal Text*, a single line of horizontal text; *Path Text*, again a single line but one which can be distorted to follow a path; *Mould Text*, but this time shaped by a mould which imposes independent boundaries for the top and bottom of the line of text, and lastly *Text Areas*, consisting of text originating outside Poster (created with the Edit application for example) and imported into designated *text areas* within Poster in much the same way as Draw can handle text areas.

Path Text and Mould Text are both referred to within Poster as *plastic text* because they can be moulded and shaped. Non-plastic text, the other two forms, can still be changed with regard to font, font size and certain other parameters, but always remain as one or more lines of horizontal text. Poster is supplied with a library of 20 outline fonts all from the *Electronic Font Foundry* (see the review on DTP resources in RISC User Volume 3 Issue 8). Some of these such as Blade, Fancy Dress, Shiver and Twig are really quite innovative, and will do much to enhance your finished work. Any other outline font may also be used.

Although normal DTP styling such as italics, bold, subscript etc is not possible, more unusual text formats are: inverted, reversed left to right, slanting (by a user-specified amount), crazy, floor shadows, wall shadows, etc., and by combining various styles and the use of moulds some very unusual results can be obtained.

The three discs provided contain, in addition to the Poster application itself, two font libraries, two border libraries, two mould libraries, a path library, and several libraries of clipart all in Draw file format. There is certainly plenty of material to provide ample basis for your own work, and the Draw, Edit and Paint applications provide the resources needed not only to create any other text or picture objects you may need, but also to create paths, moulds and borders of your own design.

The enormously exciting possibilities opened up by Poster are amply illustrated within the manual and other samples provided, as shown in the examples accompanying this review. There is, however, one component of Poster that I feel somewhat less happy about, and that is the documentation. Poster is quite a complex package which will take even the competent Archimedes user some time to come to grips with. The first problem is sorting out the documentation.



The manual commences with useful information on the installation of the software, and if you continue reading, before you realise it, you are reading through a reference manual which systematically covers each feature of the Poster main menu. If you abandon this and seek some form of introductory tutorial you will seek in vain. The worksheets supplied go some way to fill this need, but are what they purport to be, worksheets to explore and experiment with. Thus back you go to the main manual, and continue reading and re-reading, gradually building up some understanding of how Poster works.

the BLADE font	the PLAQUE font
the BUBBLE font	the RUNT font
the BUXOM font	the SHIVER font
the CHUNKY font	the SILK font
the DIRECT font	the SNOWBALL font
the EFF_PL BOOK font	the SPIROS font
the FANCY DRESS font	the STREAK font
the FREEHAND font	the TIPTOP font
the FATED font	the TUBE font
the OPEN font	the TWIG font

In my view, a more organised approach to the documentation, to better guide the new user (of Poster), would prove useful, and certainly some form of tutorial would not come amiss. As it is, the documentation makes it less easy to come to terms with the undoubted potential of the software than should be the case. Lastly, the laudable use of recycled paper for the manual does mean that the illustrations do less than justice to what Poster is capable of, and readers looking at the sample printouts from different types of printer might well deduce that 9-pin dot matrix is as good as a laser printer, surely not what was intended. I also question whether the recycled paper used will stand up to heavy and/or frequent usage, surely a factor for schools.

With those reservations regarding the documentation, I have to say that 4mation certainly has another winner on its hands, and this software seems destined to appeal to all Archimedes users, whether or not they have anything to do with education. The price may seem on the high side, but then you do get over 20 fonts included for your money. If you still need to be convinced, then just look at the examples of what can be achieved.

Product *Poster*
Supplier *4mation Educational Resources*
Linden Lea, Rock Park,
Barnstaple, Devon EX32 9AQ.
Tel. (0271) 45566
Price *£102.35 inc. VAT*
A more basic version with only two fonts, one border file and no clipart is available for £73.60 inc. VAT.

RU

Archimedes Software

Disc 7 - A New Chess Program for The Archimedes.
A Chess program that takes full advantage of RISC OS, installing itself on the icon bar and running on the desktop in a window at the same time as other applications. You can carry on working with other programs whilst the Chess program is thinking of its next move.
Features: load and save games, edit board, step backwards and forwards through game, computer 'v' computer mode, play black or white, reverse board, save game setup. multiple levels, print game. Moves displayed in algebraic notation. Full mouse control over game, on screen clocks. Hint. Choice of piece when promoting pawn. New better design of board and pieces. Undo move.

Disc 22 - Novapaint 16 colour paint package.
Paint package with two tone font system. user defined brushes, airbrush, auto-shader, colour fills. define graduated palettes. pixel average, area squash/ stretch/distort/rotate. sphere wrap, cylinder wrap. Online help, manual, demos.

Disc 23 - Desktop Applications
Disc of RISC OS !applications, 24 system fonts, sprites and Draw files. Includes !!Fastdesk, !Backpict, !FileHelp, !CopyOpts, !FontFix, !Pointer(1-3), !RomSprite, !Indicator, !Saver, !SectCopy, !SoundOff, !Timer, !FormatTxt, !Aquarium.

Disc 24 - RISC OS Terminals
Multitasking terminals bring Archie comms to the desktop. Stay online whilst you use other programs. Viewdata and ANSI/VT100/VT52 emulations. Suit Prestel, bulletin boards and mini/mainframes. Auto logon scripts. CET and X/Ymodem (batch), file transfer. RISC OS printer driver support. !RS423state. CET coder.

Disc 12 - The World
130,00 points on the earths surface, outlining the continents, lakes, and borders.

Disc 26 - World Map
!WorldMap, takes the data off disc 12, and converts it into !Draw file maps. Now you can make your own map of any part of the world and import it into !Ovation, !Impression, !Draw etc. RISC OS !app. Includes C source. Also many extra items, desktop magnifier, make bit maps for outline fonts, cassette labels etc.

Special Offer, you can have disc 26 for just £1.00 when you buy disc 12.
Discs 12 and 26 together count as one disc. Offer applies if you have disc 12 already.

Disc 1	EMACS. Classic multi document editor with macro language. Includes full C source.
Disc 5	C Toolkit. 20+progs for C programmers with sources. grep, awk, make, sed, more...
Disc 6	Kermit. Archimedes, BBC and MSDOS versions of file transfer/comms. prog.
Disc 10	More C Tools. yacc and lex with examples and C source. New versions...
Disc 14	GNU Tools#1. Quality tools with source. grep, egrep, sed, awk, diff. New versions.
Disc 16	Spark. RISC OS file and directory archiver. !backdrop, pd. !apps. 1Mb colour pics.
Disc 18	MTV Raytracer. database driven 3D raytracing package with C source code.
Disc 19	Starchart. RISC OS program to make Draw file starmaps. Catalog of 9000 stars.
Disc 25	Vi Clones Two copies of the popular UNIX 'vi' editor with C sources and docs.

Each disc is £5.99 inc. Buy four claim another one free!

David Pilling, P.O. Box 22, Thornton Cleveleys, Blackpool. FY5 1LR.

Free Air Mail delivery on overseas orders. Full list available on request.

Background Text Printer

by D.J.Holden

This utility is designed to replace the PrinterDM printer driver for printing ASCII text files. It has several advantages over PrinterDM. Firstly, it uses less memory and installs more quickly. Secondly, printing is carried out in the background with no further disc accesses once the file to be printed is loaded. Thirdly, any character can be replaced by a string of codes And finally it can easily be tailored to your own printer and can print text in a variety of styles. It will not, however, print graphics, outline fonts, Draw files etc.

The program requires only 16K of RAM except when actually printing a file. This is a great advantage if you are using a 1 Mbyte machine with other applications running. When you use it to print a file, it claims extra RAM from the Wimp Pool to load the file but gives it back when it has finished. The whole file is loaded at the beginning of the printing operation and no further disc access is required. This avoids constant requests for you to re-insert the correct disc when using a single floppy machine.

CREATING THE APPLICATION

Create a new application directory called *!TextPrint*. This should contain three files: a Basic program called *!RunImage* which is given in Listing 1; an Obey file called *!Run*, described below; and a sprite file *!Sprites* containing the sprite for the application icon. To create this, you could use the PrinterDM sprite as a basis and superimpose a large "T" (for Text) over it. The sprite should be called *!textprint*.

The Obey file *!Run* can be created using Edit, and should contain the following lines:

```
IconSprites <Obey$Dir>.!Sprites
WimpSlot -min 16K -max 16K
Run <Obey$Dir>.!RunImage
```

USING TEXTPRINT

Double clicking on the !TextPrint icon in the directory viewer will install the application on the left of the icon bar beside the filing system icons. The legend "Ready:" will appear below the icon to indicate it is ready to print a file. If you click Menu on this icon a menu will be displayed containing the following options: *Text Style, Page Length, Left Margin, Skip Lines, Reset, Stop Print* and *Quit*. You will see that *Page Length, Left Margin* and *Skip Lines* have arrows beside them. If you put the mouse pointer over one of these items and slide it to the right a small window will open which displays the value used by the function. You can enter new values in these windows.

If you do the same with *Text Style* a sub-menu will be displayed which shows the various text styles offered. This can be customised to suit your own requirements, but the following are built into the program as listed: *Pica, N.L.Q., Elite, Condensed, Small* (Elite with closer line spacing) and *Squashed* (combining Elite, Superscript and Condensed with half the normal line spacing). If you click on one of these an arrow will appear beside it to show that it has been selected.

Ticks will also appear and disappear beside *Page Length, Left Margin* and *Skip Lines* on the main menu if you click on these. The tick means that the item is active. For example, if you set the margin to 6 and *Left Margin* has a tick, then all printing will have a left margin of 6 characters. If there is no tick there will be no left margin. The *Skip Lines* function, if ticked, will leave blank the specified number of lines at the bottom of a page to avoid printing over the perforations on fanfold paper.

To print a file simply drag it onto the icon bar icon. The file will be loaded and printing will commence. No printer reset codes are sent at the start of printing, but you can send these independently before you start by clicking on *Reset*. This has been done so that the reset may be omitted if you wish to set up functions from the printer's front panel before printing.

You can now carry on working with other applications while printing continues in the background. The number of bytes in the file which remain to be printed at any time is

shown beneath the icon. You can activate the menu again at any point in order to abort the current printing operation by clicking on *Stop Print*, or to quit TextPrint altogether.

CUSTOMISING THE PROGRAM

The styles built into the program are designed to suit the author's Star NL10 printer, but the program has been written in such a way that it is very easy to add or delete styles and to modify the required control codes. To add a new style you must make two changes to the program. First you need to put the extra option on the menu. This is done by PROCfonts which starts at line 2020. To add another font, for example a bold face, include an extra line:

```
2091 PROCfont ("Bold")
```

This will put it on the menu and the program will automatically move the menu up the screen to make room for it.

Now we must add the correct printer codes. This is done by PROCset_font which starts at line 1900. Again we merely need to add one new line:

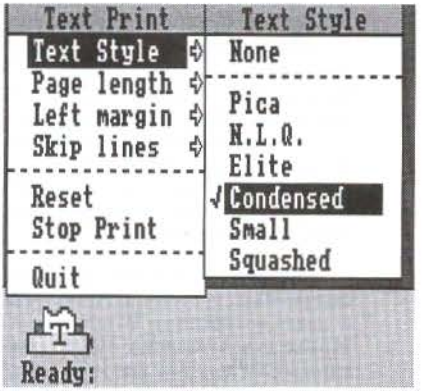
```
1971 WHEN 7:BPUT#P%,E$+"E"
```

The standard Epson code for Bold is ESC "E". Note that we are using the printer stream as a file (which is opened in line 420), which is why codes are sent to the printer with BPUT rather than VDU. This avoids problems if the Wimp tries to write to the screen during printing. The value following the WHEN statement should match the position of that item in the sub-menu (ignoring the "None" option).

To remove a style you simply do the opposite. For example, to remove the N.L.Q. option, delete the appropriate line from PROCfont and PROCset_font. You must also change the numbers of the WHEN lines which decode the menu selection so the first is WHEN 1:<code>, the second WHEN 2:<code>, and so on.

FILE TYPES

The program at present will accept only file types &FFF (text files), &FEB (Obey files), and &FFE (Command files). If you drag any other file type to the icon you will get an error message to tell you that the program doesn't understand this file type. If you click on Cancel the program will give up, but if you click on OK it will try to print the file anyway. Be prepared for some strange results if you force it to print an unknown file type! You can extend the number of acceptable file types by adding to the list in FNfile_type (line 630).



Text Print installed on the Icon bar, with main and sub-menu showing

SPECIAL CHARACTERS

The program can intercept any character and send something else to the printer. This is especially useful for printing the pound sign correctly but could be utilised for other purposes. It is done in PROCprint by lines 750-790. Line 760 intercepts character 163 which is the Archimedes code for the pound sign. Instead of sending 163 to the printer it sends the printer codes which are specified on that line. In the example shown in the listing, the codes switch the printer to the English character set, print character 35 ("#"), which is the code for the pound in this standard, and switch back to the U.S.A. character set, which is normally the default on the author's printer. Note that the variable free% must be decreased by the number of bytes sent to the printer.

You can add extra WHEN statements to intercept other characters. By inventing your own control codes in this way you can make text editors such as Edit or Twin underline headings, print words in italic, etc. For example, to underline headings in Edit you could insert these lines :

```
761 WHEN 21:BPUT#P%,E$+"-"+CHR$1:free%-=3
762 WHEN 14:BPUT#P%,E$+"-"+CHR$0:free%-=3
```

Now load some text into Edit and move to

the start of the section you want to underline. Press Ctrl-U (for Underline), move to the end of the section and press Ctrl-N (for Normal). These control codes will be shown in Edit as a hex number between square brackets.

In this example, Ctrl-U inserts the ASCII code 21 into the text, and Ctrl-N code 14. When TextPrint comes across character 21 it translates it into ESC "-" 1 which is the Epson code to start underlining, and when it finds 14 it translates it into ESC "-" 0 which is the code to end underlining.

There are three variables at lines 1420-1440 which you may wish to alter. These are all string variables and set the default values for the margin, page length (in lines), and lines skipped at the bottom of the page.

```
  10 REM            >!RunImage
  20 REM Program    Text Printer
  30 REM Version    A1.00
  40 REM Author     D.J.Holden
  50 REM RISC User September 1990
  60 REM Program    subject to copyright
  70 :
  80 SYS "Wimp_SlotSize",-1,-1 TO mem%
  90 text%=&8000+mem%
 100 DIM data% 256,data2% 256,menu% 872
,valid% 5,bytes% 8,sprite% 12
 110 E$=CHR$(27)
 120 $valid%="a0-9"
 130 $bytes%="Ready:"
 140 $sprite%="s!textprint"
 150 font%=0
 160 marg%=FALSE:skip%=FALSE:page%=FALS
E
 170 P%=0:quit%=FALSE
 180 SYS"Wimp_Initialise",200,&4B534154
,"Text Printer"
 190 PROCicon
 200 PROCcreate_menu
 210 ON ERROR PROCreport_error
 220 REPEAT
 230   SYS"Wimp_Poll",&31 AND NOT(P%),da
ta% TO reason%
 240   CASE reason% OF
 250   WHEN 0:PROCprint
 260   WHEN 6:IF data%!16=icon% AND data
%!12=-2 AND data%!8=2 SYS"Wimp_CreateMen
u",,menu%,data%!0-160,424
 270   WHEN 9:PROCselect
 280   WHEN 17,18:
 290     CASE data%!16 OF
 300     WHEN 0: quit%=TRUE
 310     WHEN 3: PROCstart_print
 320     ENDCASE
 330   ENDCASE
 340   IF P% AND quit% quit%=(FNmessage(
"Still printing: stop and quit?",3)=1)
 350 UNTIL quit%:IFP% CLOSE#P%
 360 SYS "Wimp_CloseDown"
 370 END
 380 :
 390 DEFPROCstart_print
 400 IF P% J%=FNmessage("Printer busy",
1):ENDPROC
 410 IF NOT FNload ENDPROC
 420 P%=OPENOUT("Printer:")
 430 ptr%=0
 440 IF page% BPUT#P%,E$+"C"+CHR$(VAL($
page_length%))
 450 IF marg% BPUT#P%,E$+"l"+CHR$(VAL($
margin%))
 460 IF skip% BPUT#P%,E$+"N"+CHR$(VAL($
skip_lines%))
 470 PROCset_font(font%)
 480 ENDPROC
 490 :
 500 DEFFNload
 510 LOCAL i%,type%,slot_size%
 520 type%=data%!40
 530 IF FNfile_type(type%)=FALSE =FALSE
 540 i%=data%+44:WHILE ?i%>31:i%+=1:END
WHILE:?i%=13:file$=$(data%+44)
 550 SYS"OS_File",17,file$ TO ,,,,len%
 560 SYS"Wimp_SlotSize",mem%+len%,-1 TO
 slot_size%
 570 IF slot_size%<mem%+len% i%=FNmessa
ge("Unable to claim space for file",1):=
FALSE
 580 SYS"OS_File",&FF,file$,text%,0
 590 data%!12=data%!8:data%!16=4
 600 SYS"Wimp_SendMessage",17,data%,dat
a%!4
 610 =TRUE
 620 :
 630 DEFFNfile_type(type%)
 640 CASE type% OF
 650 WHEN &FFF,&FEB,&FFE:=TRUE
 660 OTHERWISE:=(FNmessage("I don't kno
w how to print type "+STR$~(type%)+" fil
es. Do you want me to print it as plain
text?",3)=1)
 670 ENDCASE
 680 :
 690 DEFPROCprint
 700 LOCAL free%,i%
```

FONTS

London *(ITC Garamond®*)*

Oxford (Optima®*)

Αχιλῆος, ẍ ∌ Ω̃(π̂∘φ̄) †*

Xmas, Hot Dog

✂✁✻✼✽✷✺☎✆✐✉‡*

Tamsin (Brush Script®*)

Sophie (Park Avenue®)*

1 These are just a few typefaces selected from over 100 fully hinted fonts available now. They can be used with any Archimedes DTP program and may be mixed freely with other fonts.

Many of our fonts are *now 100% PostScript® compatible.
Of course, EFF originals do not have PostScript equivalents.

2 *The prices vary depending on number of fonts and type. Site licences for schools and business use available.*

3 We also sell Canon BJ-130e Ink Jet printer with a resolution of 360 dots per inch. This printer can use A2 paper and is ideal for professional work. *Price, including the Printer Driver, is £795.00, but we give up to 30% discount.*

Other DTP software & hardware available, see our Price List.

This advertisement was made using only ACORN DTP, our fonts & Canon BJ-130 printer.
†MathGreek, ‡Full (224 symbols) Dingbats fonts.

Prices are exclusive of VAT and delivery

Please write for a free 24 page Font Catalogue & Price List to
The Electronic Font Foundry • 18 Brockenhurst Road • ASCOT SL5 9DL
or ☎ **0990-872923** (24 hours)
We accept Visa, MasterCard, EUROCARD & Access

```
  710 PROCfree(len%-ptr%)
  720 free%=ADVAL(-4)
  730 IF free%<128 ENDPROC
  740 REPEAT:i%=text%?ptr%
  750  CASE i% OF
  760  WHEN 163:BPUT#P%,E$+"R"+CHR$(3)+"
#"+E$+"R"+CHR$(0):free%-=7
  770  OTHERWISE
  780   BPUT#P%,i%:free%-=1
  790  ENDCASE
  800  ptr%+=1
  810 UNTIL ptr%>=len% OR free%<20
  820 IF ptr%<len% ENDPROC
  830 IF skip% BPUT#P%,12
  840 PROCstop_print
  850 ENDPROC
  860 :
  870 DEFPROCstop_print
  880 CLOSE#P%:P%=0
  890 SYS"Wimp_SlotSize",mem%,-1
  900 PROCfree(0)
  910 ENDPROC
  920 :
  930 DEFPROCfree(left%)
  940 $bytes%=RIGHT$("       "+STR$(left%
),6)
  950 IF left%=0 $bytes%="Ready:"
  960 data%!0=-2:data%!4=icon%
  970 data%!8=0:data%!12=0
  980 SYS "Wimp_SetIconState",,data%
  990 ENDPROC
 1000 :
 1010 DEFPROCselect
 1020 SYS"Wimp_GetPointerInfo",,data2%
 1030 CASE !data% OF
 1040 WHEN 0 :
 1050  IF data%!4<>-1 THEN
 1060   PROCtick(menu%+364,font%,0)
 1070   font%=data%!4
 1080   PROCtick(menu%+364,font%,1)
 1090  ENDIF
 1100 WHEN 1:page%=NOT(page% AND data%!4
):PROCtick(menu%,1,page%)
 1110 WHEN 2:marg%=NOT(marg% AND data%!4
):PROCtick(menu%,2,marg%)
 1120 WHEN 3:skip%=NOT(skip% AND data%!4
):PROCtick(menu%,3,skip%)
 1130 WHEN 4:IF NOT(P%) VDU 2,1,27,1,64,
3
 1140 WHEN 5:IF P% PROCstop_print
 1150 WHEN 6:quit%=TRUE
 1160 ENDCASE
 1170 IF data2%!8=1 SYS"Wimp_CreateMenu"
,,menu%
 1180 ENDPROC
 1190 :
 1200 DEFPROCtick(base%,item%,state%)
 1210 LOCAL i%
 1220 i%=base%+28+(24*item%)
 1230 !i%=(!i% AND -2) OR (state% AND 1)
 1240 ENDPROC
 1250 :
 1260 DEFPROCcreate_menu
 1270 I%=menu%
 1280 PROCmenu("Text Print")
 1290 PROCitem("Text Style",menu%+364)
 1300 PROCitem("Page length",menu%+196)
 1310 PROCitem("Left margin",menu%+248)
 1320 PROCitem("Skip lines",menu%+300):I
%!-24=&02
 1330 PROCitem("Reset",-1)
 1340 PROCitem("Stop Print",-1):I%!-24=&
02
 1350 PROCitem("Quit",-1):I%!-24=&80
 1360 page_length%=menu%+352
 1370 margin%=menu%+356
 1380 skip_lines%=menu%+360
 1390 PROCwrite("Lines",page_length%)
 1400 PROCwrite("Characters",margin%)
 1410 PROCwrite("Lines",skip_lines%)
 1420 $page_length%="66"
 1430 $margin%="0"
 1440 $skip_lines%="6"
 1450 I%+=12:PROCmenu("Text Style")
 1460 PROCfonts:I%!-24=&80
 1470 ENDPROC
 1480 :
 1490 DEFPROCmenu(name$)
 1500 $I%=name$:I%!12=&70207
 1510 I%!16=200:I%!20=40
 1520 I%!24=0:I%+=28
 1530 ENDPROC
 1540 :
 1550 DEFPROCwrite(item$,indir%)
 1560 PROCmenu(item$)
 1570 I%!0=&84:I%!4=0
 1580 I%!8=&7000111
 1590 I%!12=indir%:I%!16=valid%
 1600 I%!20=4:I%+=24
 1610 ENDPROC
 1620 :
 1630 DEFPROCitem(item$,submenu%)
 1640 I%!0=0:I%!4=submenu%
 1650 I%!8=&7000011
 1660 $(I%+12)=item$:I%+=24
 1670 ENDPROC
 1680 :
 1690 DEFPROCstyle(name$)
 1700 PROCitem(name$,-1)
 1710 ENDPROC
```

```
 1720 :
 1730 DEFPROCicon
 1740 data%!0=-2:data%!4=0
 1750 data%!8=-16:data%!12=96
 1760 data%!16=84:data%!20=&1700010B
 1770 data%!24=bytes%:data%!28=sprite%
 1780 data%!32=8
 1790 SYS"Wimp_CreateIcon",,data% TO ico
n%
 1800 ENDPROC
 1810 :
 1820 DEFFNmessage(message$,flag%)
 1830 LOCAL i%
 1840 data2%!0=0
 1850 $(data2%+4)=message$+CHR$0
 1860 SYS"Wimp_ReportError",data2%,flag%
+16,"Text Printer" TO ,i%
 1870 =i%
 1880 :
 1890 **>> Sets the current font <<**
 1900 DEFPROCset_font(font%)
 1910 CASE font% OF
 1920 WHEN 1:BPUT#P%,E$+"P"
 1930 WHEN 2:BPUT#P%,E$+"x"+CHR$(1)
 1940 WHEN 3:BPUT#P%,E$+"M"
 1950 WHEN 4:BPUT#P%,15
 1960 WHEN 5:BPUT#P%,E$+"M"+E$+"A"+CHR$(
9)
 1970 WHEN 6:BPUT#P%,E$+"M"+CHR$(15)+E$+
"S"+CHR$(0)+E$+"A"+CHR$(6)
 1980 ENDCASE
 1990 ENDPROC
 2000 :
 2010 **>> Puts fonts on the menu <<**
 2020 DEFPROCfonts
 2030 PROCstyle("None"):I%!-24=&03
 2040 PROCstyle("Pica")
 2050 PROCstyle("N.L.Q")
 2060 PROCstyle("Elite")
 2070 PROCstyle("Condensed")
 2080 PROCstyle("Small")
 2090 PROCstyle("Squashed")
 2100 ENDPROC
 2110 :
 2120 DEFPROCreport_error
 2130 IF P% CLOSE#P%:P%=0
 2140 !data%=ERR
 2150 $(data%+4)=REPORT$+" (Error code "
+STR$(ERL)+")"+CHR$0
 2160 SYS"Wimp_ReportError",data%,1,"Tex
t Printer"
 2170 ENDPROC
```

RU

"FIRST"

ADVANCED STATISTICAL SYSTEM

For Acorn Archimedes; BBC Models B, B+ and Master; "Industry Standard" machines

A powerful and practical tool for Research, Industry, Business, and Teaching

Integrated, interactive, robust, fast, accurate, modular. Designed to facilitate data critique.
Many data entry options. Full data management and formatted display. Extensive data transforms.
Handles missing values and data subsets. Scatterplots, regression plots, function plots.
Univariate statistics. Paired and unpaired t tests. Chisquare tests. Nonparametric methods.
Unrivalled REGRESSION facilities eg weighted, through the origin, standardised. Full statistical information.
Residuals, fitted and predicted values. Much more. Correlations. ANOVA. Contour plots of regressions.
Regression DIAGNOSTICS - VIFs, influential points etc. Automatic warnings.
ROBUST regression - many influence functions. Powerful NONLINEAR least squares
Time Series, eg moving averages, exponential smoothing, causal models.
One- Two- and Three-way ANOVA subsystems. Distributions generator. Histograms. Linear Calibration.
Cluster analysis. Many other powerful analytical and descriptive features. Full utilities.

Price £120-£180 (machine and version dependent). Special RISC USER discount available.

There's far too much to describe here. Get full information now from:

Serious Statistical Software, Lynwood, Benty Heath Lane, Willaston, South Wirral L64 1SD Tel. 051 327 4268

Escape, Break and Reset

by Lee Calcraft

The Escape and Break keys, and the Reset button (at the rear of the Archimedes keyboard, or on the right-hand side of the A3000) can all be used to interrupt the running of a Basic program, but these keys are handled differently by the machine, and can be used in a variety of different ways. Moreover, the effect of the first two is user programmable, while the last provides a very powerful way to escape from tricky situations without program loss. In this article I want to document the major features of this important set of keys, and provide some tips on their use, and the way in which their functions can be altered.

ESCAPE

We will start with some of the features of Escape. Pressing this key (or simulating it by executing *FX 125) during the running of a non multi-tasking program will normally cause it to halt with error number 17. This can be trapped within the program's error handler. For example:

```
.
ON ERROR PROCerror
.
.
END
:
DEFPROCerror
IF ERR=17 THEN
  PRINT "You pressed Escape"
ELSE
  PRINT REPORT$ " at line ";ERL
ENDIF
ENDPROC
```

This will cause the first message to be displayed if the user presses Escape, while any other error will cause Basic's error message and error line number to be displayed.

With multi-tasking programs, Escape will not normally cause a program to generate an error in this way, though any task can choose to respond in its own way to Escape. The Wimp's standard use for Escape is just as a "Cancel" key. For example, pressing Escape when a menu is on screen will clear the menu.

The key which performs the Escape actions described above is normally the key labelled Esc at the top left of the keyboard, but you may program any key to take on this function. This is achieved using a single *FX call:

```
*FX 220,n
```

This will make the key whose ASCII value is n take on the Escape function. For example, if you use:

```
*FX 220,65
```

then the "A" key will become the Escape key - not very useful, while the normal Escape key will do no more than return its ASCII value (27) when pressed. This feature can be useful in programs where you want to keep Escape active, but make it less obvious to the casual user. For example, if you use:

```
*FX 220,0
```

this gives ASCII 0 the Escape function, and you need to use Ctrl-@ to generate this code. Programming the Escape key in this way is not permanent. It can be reset to the normal Escape key both by using:

```
*FX 220,27
```

or by a hard Reset (such as Ctrl-Break or powering up). If you want to completely disable the Escape action, then you can use *FX 200,1. This is cancelled after a hard Reset or by issuing *FX 200. Incidentally *FX 200,3 will disable Escape, and also clear user memory on Reset.

BREAK

The default setting for the Break key is that it should behave exactly like the Escape key in all the above respects. After issuing *FX 220,0 (or whatever), the Break key will have no effect on its own (except to generate ASCII 27), though its action in conjunction with the Shift or Ctrl keys will not be changed.

The effect of Break, both on its own, and in combinations with Shift, Ctrl and Shift-Ctrl can be programmed using another *FX call. *FX 247 permits each of these four possible key combinations to have any one of the three following effects: act as Reset, act as Escape or have no effect. Full details are given on page 529

of the PRM, and this is summarised in table 1. The machine default is:

```
*FX 247,1
```

This makes Break on its own act as an Escape key, while Shift-Break, Ctrl-Break and Shift-Ctrl-Break generate a Reset (see below).

***FX 247,n**

n is made up as follows:

Bits	Key Combination
0 and 1	Break
2 and 3	Shift-Break
4 and 5	Ctrl-Break
6 and 7	Shift-Ctrl-Break

Each two-bit number can take one of the following binary values:

Value	Effect
00	Act as Reset
01	Act as Escape
10	No effect
11	Undefined

Note - this is one of the few OS_Byte call settings which are not cleared with Ctrl-Reset. Only a power-up will restore the default value.

Table 1. Programming the Break key

If you use *FX 247,170 this causes all four actions to have no effect, so that pressing Ctrl-Break will have no effect on a running program. This can be useful for proofing a program against user interruption.

RESET

We have not yet covered the Reset key. This key is hard-wired within the computer, and pressing it will always reset the ARM processor. This makes it ideal for getting out of tight spots, even from endless loops in a piece of ARM code. Moreover, Reset on its own will leave Basic programs intact providing that the Desktop is not the default language (just type *BASIC if you are not in Basic, then OLD to retrieve your program). Be warned though that if you press Reset from within the Desktop, active tasks will be closed down without saving data files.

There are two types of Reset: hard and soft. A hard Reset is performed when you power up the Archimedes or if you press Ctrl-Reset. A soft Reset occurs when you press Reset either on its own, or in conjunction with Shift. The above rules also apply to the Break key if it has been programmed to generate a Reset. Thus by default, Ctrl-Break will generate a Reset, and since Ctrl is held down, it will be a hard Reset.

A soft Reset will take you out of your current program and leave you in the configured language. This can be set using *Configure Language n (n=4 gives Basic, n=3 gives the Desktop). A hard Reset does much more: it completely resets the machine according to all the configuration options (use *Status to view these), reallocating memory where necessary. This means that it can sometimes be very difficult to retrieve a Basic program after a hard Reset.

AUTO-BOOT

In the default state, pressing Shift-Reset (or Shift-Break if Shift-Break is set to generate a Reset) can cause the machine to perform an auto-boot. This means that the operating system checks the current filing system to see which boot option is in place (set up with *OPT 4,n - see table 2). If the set option is 1, 2 or 3 it looks on the currently selected drive for a file named $.!Boot ($.Boot.!ARMBoot for Econet). This provides a simple way of running a start-up sequence.

*OPT 4,0	No boot action (default)
*OPT 4,1	*Load boot file
*OPT 4,2	*Run boot file
*OPT 4,3	*Exec boot file

Table 2. The four boot options

There is a special *Configure option to alter the way in which this works. If you use:

```
*Configure Boot (cancel with NoBoot)
```

then auto-booting will occur whenever a Reset occurs that is not accompanied by Shift. This means that powering up the machine, or activating Ctrl-Reset (or Ctrl-Break) or Reset on its own will auto-boot the machine. This is very convenient since it means that you can automatically load function key definitions, aliases and useful modules; and even install applications within the Desktop and open filer windows whenever the machine is turned on. If you want to perform a reset without this happening, just use Shift-Reset (or Shift-Break). RU

BEEBUG SCAVENGER

The Beebug Scavenger image scanner adds life to **Desktop Publishing, Word Processing, Drawing and Painting**, and many other activities. Just some of the possible uses are:

- Incorporating photographs and drawings into text documents.
- Scanning pictures to use them as templates for line drawings.
- Creating artwork for exciting title screens.
- Scanning photos and text to make a graphical database.

Scavenger consists of a professional quality ***scanner***, a half-width ***interface card***, and a comprehensive ***user guide*** covering installation, use, hints and tips, technical information and routine maintenance.

Scavenger is available with two different scanners. For most users the **half-width scanner**, capable of reading an image up to 105mm wide, will be suitable. If you find your requirements grow, you can upgrade to the **full A4 width** device, Scavenger A4, which can scan a 216mm wide image.

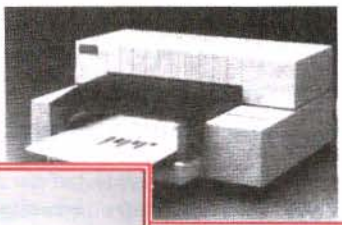
	Price	Stock Code
Scavenger	£194.95	0730G
Scavenger 3000	£219.95	0735G
Scavenger A4	£439.95	0731G
Scavenger 3000 A4	£469.95	0733G
Sheetfeeder for A4 models	£179.95	0732G

All prices include VAT. Carriage on these items is £7.
The Archimedes models of Scavenger are available now, the AS3000 models will be available in August.

To obtain the greatest scanning precision, a **sheet feeder** can be added to Scavenger A4. This is fully automatic and can scan an entire A4 page under software control in just 15 seconds.

The Hewlett-Packard DeskJet Plus printer uses ink jet technology to obtain an output quality approaching that of the laser printer. Yet it costs only a fraction of the price, weighs a mere 14 lb (the Panasonic KX-P4450 laser printer weighs 56 lb), and requires a minimum of maintenance.

Immediately on top of the collecting tray for This latter uses a mecl each emerging sheet until and then drops it onto (face up in reverse order The reason for the presumably to prevent i being smu arrival of t have to experienced during tests graphics noticeably da some signs wrinkling of t



The Desk both serial interfaces, a Archimedes though

The **Wimp-based software** to operate the Beebug Scavenger is incorporated in a ROM on the interface podule. Scavenger is operated from the Desktop, and you can choose whether you want the software to install itself automatically on the icon bar, or whether you wish to start it manually through a star command. Just some of the features offered by the software are:

- Variable image size, with the maximum width being limited by the scanner, and the depth limited only by the available memory.
- Real-time display into a window as the image is scanned.
- Save the scanned image as a sprite or as a bit-image Draw file.
- Conversion of dithered monochrome image to sixteen grey levels. Ideal for enhancing photographs.
- Full control of optional sheet feeder to allow automatic scanning.

Technical Specification

Maximum image width:	105mm for Handheld models; 216mm for A4 models.
Maximum image depth:	Limited only by available memory
Resolution:	100, 200, 300 and 400 dots per inch for handheld model; 200 dots per inch for A4 model
Scanning mode:	Reflective with CCD sensor
Dropout Colour:	Yellow-Green (570nm)
Operational modes:	Black and white or 16 grey levels for A4 model; Black and white or choice of three patterns of 32 grey levels (focusing, dot and mean) for the Handheld model
Interface:	Half-width expansion card, fitted internally to Archimedes, or in external case (supplied) to A3000
Power Source:	Internal for Archimedes; from external unit (supplied) for A3000
Computer requirements:	Either an A3000 or an Archimedes with RISC OS, a podule backplane and at least 1 Mbyte of RAM
Software:	ROM-based Desktop application

£24.95

Investigator is a disk utility program which is compatible with the Archimedes series of computers using either RISC-OS or Arthur operating systems.

Investigator has a fully WIMP front end and can perform the following on discs of many different formats:

- ▲ Examine the format of a disc in detail
- ▲ Edit the data stored on the disc
- ▲ Make backup copies of the disc
- ▲ Store the entire disc as an ordinary ADFS file

*'...one of the most powerful protected disc copiers yet published for the Archimedes...**Investigator** certainly does the job well...for peace of mind where valuable protected software is concerned, **Investigator** should certainly be top of your list.'*

Micronet

£49.95

Arcterm is a communications terminal for the Archimedes providing unparalleled flexibility and speed in the field of Archimedes terminal software.

*'... **Arcterm's** viewdata mode certainly looks the best ... **Arcterm** is one of the most comprehensive terminal packages around for any machine, let alone the Archimedes.'*

Micronet

To purchase a Serial Port production either order direct from us at the address below (you can pay using Access, Visa, American Express or cheque), or contact your local dealer. If they don't have it, tell them to give us a call!

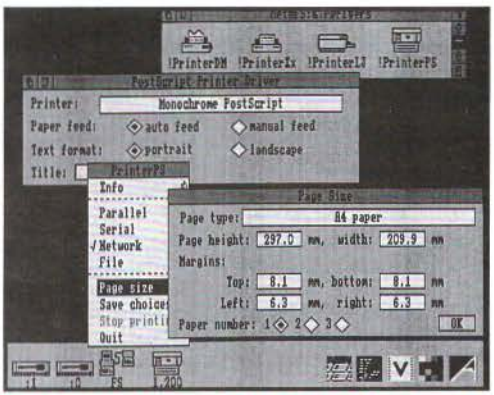
THE SERIAL PORT
Burcott Manor, Wells, Somerset BA 5 1NH
Phone 0243 531194 Fax 0243 531196

Into the Arc

Printer Drivers

by Alan Wrigley

In the last *Into the Arc* I looked at the various types of printer available, and for which tasks each is best suited. Brief mention was made of printer drivers, and it is this subject that I wish to explore in this issue.



The Desktop showing the range of Acorn printer drivers, and the menu and dialogue boxes of the PostScript driver

As explained in the previous issue, before the advent of RISC OS it was customary in the Acorn world for each and every application to arrange its own printer output. In most cases, this involved printer handling routines being built into the program. At best, this meant that the more popular printers and printer facilities were catered for to some degree; at worst, it meant that the appearance of your hard copy was entirely dependent on the whims of the software's author. A few applications, such as the View word processor, did try to overcome this by providing the facility to load in a user-defined printer driver.

RISC OS PRINTER DRIVERS

The multi-tasking world of RISC OS however, has opened up the possibility of stand-alone printer drivers, each tailored to a specific printer and totally customisable, which can sit on the icon bar and be used by any application when required, or to print any file. In theory, this gives the user complete flexibility in the choice of, and use of, a printer. It also gives programmers the freedom to write multi-tasking applications without worrying about printer handling routines.

Several printer drivers are supplied by Acorn with RISC OS. Currently these are *PrinterDM, PrinterPS, PrinterLJ* and *PrinterIx,* for dot matrix, PostScript, HP Laserjet and Integrex Colourjet respectively (as well as their compatibles of course). Further printer drivers are supplied by other companies, for example Ace Computing and Midnight Graphics. The description of a typical printer driver which follows is based on the Acorn drivers, which all present a common appearance to the user. Other drivers may not be identical but should nevertheless follow a similar pattern.

OPTIONS

Double clicking on a printer driver's application icon will install the driver on the left-hand side of the icon bar, and will also install a module in the RMA. Clicking Select on the icon bar icon will display a dialogue box showing the range of printers covered by the driver; you can cycle through these using the Select and Adjust buttons over the icon which displays the printer name. In some cases, as with LaserJet, these options may simply offer different resolutions for the same printer. New printers can be added to the list, as described later in this article. Also in this dialogue box are one or two other parameters, such as paper feed handling, and for laser printers, a choice between portrait and landscape format.

Clicking Menu over the icon bar icon displays a menu with a number of options. The output destination can be set to *parallel, serial, network,* or *file.* The latter is an extremely useful option. If you do not have the correct printer connected to your computer, or if the printer is busy doing other tasks, you can simply specify a filename, and all output will be directed to the named file instead of to the printer. The file can then be printed later, or taken on a disc to another location for printing if required, as in the case of a PostScript file which you may wish to send elsewhere for typesetting.

Also on the menu is an option for defining the page size, including height, width and margins. All the menu settings, including the output stream, can be saved as defaults, so it is possible to keep different settings for each printer driver.

USING PRINTER DRIVERS

Once installed in the machine, printer drivers can be invoked in two ways. You can either drag a file directly to the icon bar icon, or you can select the *Print* option from an application if it has one - for example Draw. When files are dragged to a driver, a certain amount of intelligence is applied. If the file is a text file (type &FFF), Obey file (&FEB) or Command file (&FFE) it is sent directly to the printer, byte by byte. If not, the driver checks if any other application knows how to print the file. Failing this, the user is informed and offered the option to print the file as text anyway.

Applications notify RISC OS that they know how to print particular file types by including a line in their !Boot file which sets a system variable when the application is first seen by the Filer. If you look at the !Boot file for Draw, for example, you will see the following line:

```
Set Alias$@PrintType_AFF /<Obey$Dir>.
    !Run -Print %%*0
```

If you now press F12 and type Show at the command line, then provided that the Filer has already seen Draw, the above line will be among the list of variables shown. This indicates that RISC OS now knows about it, and will execute the instruction which starts */<Obey$Dir>* when asked by a printer driver to print a file of type &AFF.

This makes it possible to alter the treatment of a particular file type, for example to call your own printer utility, and of course, if you are writing an application which creates printed output, it is a simple matter to include a line in the !Boot file as follows:

```
Set Alias$@PrintType_nnn <instruction>
```

Full information on system variables is given in the User Guide, and further details regarding Alias$@PrintType can be found in the !ReadMe file inside each printer driver application, and in *Hints & Tips*, RISC User Volume 3 Issue 3.

Once an application has been recognised in this way, it is normally installed and started up before the printing operation begins, and so the procedure is exactly as if the *Print* option has been selected from within the application. One useful tip worth knowing when printing from an application is that, if memory is tight, it is not necessary for the driver application to take up task memory once the module is in place. So you can install the printer driver, and then click on *Quit* from its menu to remove it from the icon bar before printing. With the Acorn drivers, this can save up to 80K of application workspace. You cannot, of course, drag a file to be printed once you have done this, as there will be nowhere to drag it to!

BIT IMAGE

In the past, it was common for programs to send output to the printer mostly as text, making use of whatever fonts and styles were available in the printer itself, unless a screen dump was specifically required. In the latter case the printer would be put into bit-image graphics mode (which simply means that all data sent to the printer is interpreted as dots making up a graphic image rather than as ASCII text characters). However, the RISC OS printer drivers (with the exception of PostScript) have been designed so that, apart from the specific instances where the file is output as text as described above, *all* information sent to the printer is in bit-image mode. The printer driver has an internal measurement system, based upon 1/1000th of a point, or 1/72000th of an inch. All images to be printed are specified according to this system, and are then appropriately scaled and plotted to the resolution of the currently selected printer.

This approach means that anything which can be drawn on screen or specified in terms of co-ordinates, such as fonts for example, can be reproduced accurately on any printer. On the other hand, it means that the printer is being used as nothing more than a dumb print engine, and a relatively slow one at that, while all the fancy bells and whistles on the latest models count for nothing. So in effect, printer technology is going in one direction while RISC OS philosophy is going in exactly the opposite. (This does not apply to PostScript, which is

something of a special case; because PostScript is a page description language resident in the printer, the printer must be highly intelligent, and the information sent by the computer is in the form of a PostScript program, not a bit-image file.)

This approach is not without reason, however. Acorn has an eye to the future, when cheap laser printers and powerful DTP packages, which rely heavily on outline fonts and graphic images, may well make today's dot matrix printers and word processors obsolete. In such circumstances, the drawbacks mentioned above will be irrelevant. And for the moment, it is still possible to make use of your printer's more exotic facilities for text printing by using a purpose-designed printer driver such as the TextPrint utility published elsewhere in this issue.

CUSTOMISATION

If a printer driver does not cater for your particular printer, it is a comparatively easy task to modify the driver to do so. Within each driver application directory there is a text file called *PrData*. This contains information which is used by the driver to fix certain parameters when a printing operation is undertaken. Let us take PrinterDM as an example. Load *PrData* into Edit and examine it carefully. The file starts with a version number then a list of default values. This is followed by a list of all the printers supported, under the heading *Real printer definitions*. To add your own printer, you just include it at the end of the list, before the section headed *Page size settings*, specifying as many of the parameters as you need. The default values mentioned above will be used for any you do not specify.

When adding your printer, follow the same format as the existing specifications. *printer_name* is the name displayed when you click on the icon bar icon, so you should make this meaningful. *printer_number* should be one higher than the last printer already in the file. *pxres* and *pyres* are the horizontal and vertical resolution of the bit-image mode in which you wish to print. You will need to study your printer manual carefully to ascertain what resolutions are available. You can cover more than one resolution by adding a further printer definition, as has been done with some of the printers already in the file. The settings which follow are the resolution values for printing half-tones. This is a matter of personal preference; the higher the resolution, the lower the number of half-tones printed. It is best to follow the figures for another printer in the list which is similar to yours.

dump_depth and *interlace* are interdependent, and are really only relevant to matrix printers. A typical printer has a vertical arrangement of either 9 pins spaced by 1/72", or 24 pins spaced by 1/180". By interspersing additional lines of print, i.e. interlacing, the vertical resolution can be doubled or trebled. So a 24-pin printer printing at a resolution of 180 dpi requires one pass of the print head with no interlacing, i.e. a dump depth of 24 and an interlace value of zero. However, a 9-pin printer printing at 144 dpi (i.e. twice the resolution the pins could achieve on their own), requires one additional interlaced line, and therefore has a dump-depth of 16 (i.e. 8 pins * 2 passes) and an interlace of 1.

The remaining parameters required are *job_prologue, job_epilogue, line_prologue, line_epilogue,* and *line_interlace*. These are specified as strings giving, respectively, the printer codes required for the beginning and end of the print job as a whole, the same for each line of print, and the codes required for the line spacing between interlacing.

Study the values given for the printers which are already defined to see how this all looks in practice. For a practical example of how to add a printer to the PrData file, see *Printing with a Canon BJ130* in this month's Hints & Tips pages.

RU

Recreational Maths Disc

Software for the ARC including;

- Mandelbrot fractals
- games of strategy and reasoning
- Calendar calculations from 1 AD
- Geometric patterns
- Moving patterns

£6.00 for the disc or send SAE and disc for set of Mandelbrot Screens and a full description from:-

T Marlow, 24 Saxon Way,
Saffron Walden, Essex CB11 4EG

MORLEY E.L.E.C.T.R.

Archimedes

THE WORLDS MOST POWERFUL MICRO

A3000	£599
410/1	£1099
420/1	£1699
440/1	£2099

Learning Curve **£699**

SPECIAL OFFER

Buy an A3000 and get an extra 1MB RAM fitted for only £50 or a free A3000 Analogue & User Port Podule. Buy a 410 and get an extra 1MB RAM free

ARCHIMEDES PERIPHERALS

Colour Monitor	£199
Mono Monitor	£73
A3000	
Monitor Stand	£29
User Port & Midi Pod.	£49
Serial Upgrade	£19
Econet Upgrade	£49

300/400 SERIES	
Acorn Rom Podule	£56
2 Slot Backplane	£37
4 Slot Backplane	£59
I/O Podule	£80
Midi Podule	£65
Second 3.5" Drive	£115

ARCHIMEDES SOFTWARE

Pipedream3	£147
RiscOs Companion	£49
1st Word+	£69
Autodesk CAD	£79
Acorn PC Emulator	£99
Acorn Desktop Pub	£149
Clares ProArtisan	£145
Clares Artisan	£29
Clares Toolkit	£34
Clares Toolkit+	£43

This is a small selection of the software that we can supply at competitive prices. Please call for any item you require.

TELETEXT

THE BIGGEST SELLING ADAPTER

The Morley Teletext Adapter is now available for the Archimedes. Advanced specifications, include digital tuning, screen dumps etc. Connects via the external podule socket or our Analogue/User Port **£125**

Existing users of our BBC Teletext Adapter can have the unit converted to an Archimedes version for **£35**

FURTHER INFORMATION

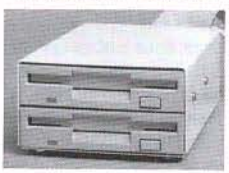
Our new catalogue will be available from mid August. We can also supply data sheets for most products. Please call or write if you require any of these.

NEW IN STOCK

MICROVITEC CUB3000 MONITOR £199 INCLUDING CABLES

This is the new monitor from Microvitec that has been specially designed for use with the all Archimedes computers. It comes in a rugged colour matched metal case with controls for brightness, contrast and volume. The picture quality is very good and all the required cables are included in the price.

A3000 3.5" SECOND DRIVE



The kit consists of a 3.5 inch floppy disc drive, data cable, power cable, metal case (cream coloured), an interface carrier board and full fitting instructions. You will be required to take the current drive out of the A3000 and replace it with the interface carrier board (unlike some add-on drives, you can still use your internal podule socket). The original drive then fixes in the case with the second drive and the case is connected to the A3000 with two cables. As the connectors are detachable, the unit can be easily disconnected from the computer if the need arises.

£125

A3000 5.25" SECOND DRIVE

The kit and assembly are similar to our 3.5" kit except the case is larger and the mechanism is a high quality TEAC 5.25" floppy disc drive. The drive (unlike some you can buy) is also buffered to Acorn specifications so eliminating the possibility of damage to your A3000 (buffering is not required for an additional 3.5" drive).

£169

LEADS & MISC. HARDWARE

SCART Monitor Lead	£8
9 Way Msync Lead	£8
Arch Serial Lead	£8
Printer Lead	£6
2 to 1 Printer switch	£20
3 to 1 Printer switch	£30
4 to 1 Printer switch	£36
64k Printer Buffer	£115
256k Printer Buffer	£199

80 col Printer Stand	£15
132 col Printer Stand	£19
A3000 Monitor Stand	£29
Tilt & Swivel Stand	£11
Eprom Eraser	£18
Eraser with Timer	£23
5.25" Discs x 10	£5
3.5" Discs x 10	£10
27128 Eproms	£4.20

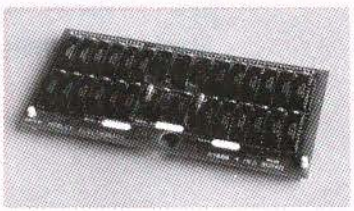
O.N.I.C.S. L.T.D

MEMORY EXPANSION

THE BEST VALUE MEMORY UPGRADES

Unlike most other cards, our 1MB upgradeable card can be upgraded with another 2MB (4MB total in machine) at a later date for maximum flexibility. Futhermore, our card can be upgraded without throwing away the memory that you already have on the card.

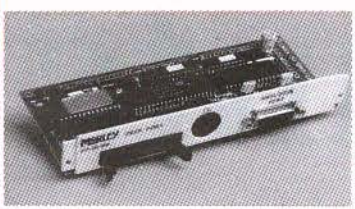
1 MB Expandable	£99
1 MB Non-Expandable	£89
3 MB Upgrade	£259
1 MB to 3 MB	£180
305 1/2 MB	£89
400 Series 1 MB	£99
400 Series 3 MB	£249



- Fully compatible with all Acorn software.
- A must for all serious Archimedes owners.
- Make full use of powerful RISC-OS packages.
- Can use extra RAM as a second drive.

*** NEW PRODUCT ***

A3000 BBC Analogue + User Port Podule



Full specification BBC analogue and user port. The analogue port is accessible using ADVAL from BASIC5 with all BBC OSbyte calls supported.

£69

Interface software written by Acorn for maximum compatibility with the BBC.

ARCHIMEDES HARD DISK DRIVES

*** NEW ***

A3000 HARD DISK DRIVE UNIT

INTERFACE

ST506 Podule £139

DISK DRIVES

Including ST506 Podule, cased drive with power supply, cable & leads

20MB	£369
40MB	£469
60-200MB	POA

Compatible with Acorn's ADFS. 16 bit interface for extra speed. Drive mounted in separate colour coordinated case with switched mode power supply and fan.

SCSI HARD DISK DRIVES

INTERFACES

A3000 SCSI Pod. £149
300/400 SCSI Pod. £199

SCSI DISK DRIVES

Including SCSI Podule, drive, cable & leads. A3000 drives also include case and power supply.

A3000 20MB	£465
A3000 30MB	£495
A3000 40MB	£575
300/400 20MB	£449
300/400 30MB	£489
300/400 40MB	£569

Please call for prices on larger drives for A3000 or 300/400

MORLEY
E.L.E.C.T.R.O.N.I.C.S. L.T.D

Morley House
West Chirton
North Shields
Tyne & Wear
NE29 7TY

Tel (091) 257 6355
Fax (091) 257 6373

Shop hours:
9am to 5:30pm (Mon-Fri) 9am to 4pm (Sat)

Acorn

We are an Acorn dealer and service centre. If you would like to have a look at the A3000 or any other Acorn/ Morley product please feel free to call in and discuss your requirements with our staff.

If there is anything you require which isn't advertised, please ring for a competitive quote.

How To Order....

BY POST: Enclose cheque made payable to MORLEY ELECTRONICS LTD.

BY PHONE: By quoting your ACCESS or VISA card number.

CARRIAGE: £1 on most orders. £3 on larger items. Hard Disks, Computers + Monitors £10 (carrier).

VAT: UK customers please add 15% to cost incl. carriage.

GOODS USUALLY DESPATCHED BY RETURN.

Government and Education orders welcome.

Acorn and Archimedes are trademarks of Acorn Computers Ltd.

Aleph One Limited

Cache discounts

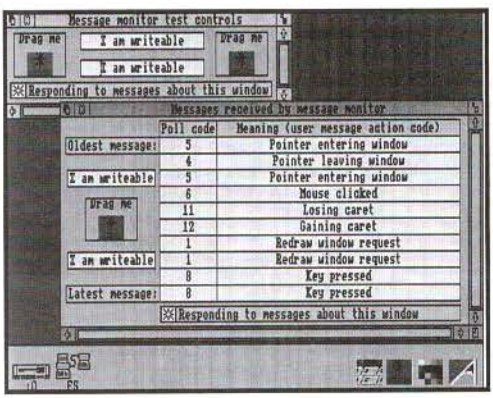
ARM3 Upgrades from Aleph One are reduced in price to £445 for the 20MHz version and £495 for the 30MHz version, both plus VAT. Available from Aleph One and all good dealers.

Aleph One Limited The Old Courthouse Bottisham
Cambridge CB5 9BA. Tel (0223) 811679. Fax (0223) 812713.

A Wimp Message Monitor

by A.Phillipson

This Wimp application provides a means of monitoring the Wimp polling system. You can choose which Wimp reason codes you want to monitor, and these and corresponding text messages will be displayed within a scrolling window. You can also choose whether or not the monitor window itself should respond to Wimp functions, and there is also a control window to allow you to test more directly certain Wimp actions.



INSTALLING THE APPLICATION

You will need to create an application directory called !Messages. Then type in the program listed here and save with the name !RunImage within the application directory. In the same directory you will also need to create a !Run file (use Edit to create a new Obey file), and enter:

```
Set Messages$Dir <Obey$Dir>
Wimpslot -min 24K -max 24K
Run <Message$Dir>.!RunImage
```

If you want other than the default application icon to appear, create a suitable sprite using Paint. Save the sprite with the name !Messages in a sprite file called !Sprites also within the application directory.

USING THE WIMP MESSAGE MONITOR

Install the application on the icon bar by double clicking on its icon in a directory viewer. Once installed, the program will open a window on the screen showing what messages it has received. The program receives all broadcast messages and all messages sent to it. It does not intercept private messages sent from one task to another. It receives messages, and reports them (subject to their reporting status) whether or not the reporting display window is open.

POLL CODES REPORTED

The main menu is obtained by clicking the Menu button over the application's icon bar icon, or if the *Respond* option has been selected, by similarly pressing Menu over the display window. You can decide which poll codes the program is and is not to report by means of the *Report* sub-menu, which is a list of poll codes. A tick next to an entry in this menu means that the program will report the poll code in question. Click the mouse on a poll code to change its status. The default on starting up is to report all poll codes except 0 (null).

WINDOWS

The program controls two windows, one for reporting the poll codes the program receives, and the other containing some additional test controls. Use the *Controls* and *Messages* options in the menu to open and close the respective windows. A tick next to one of these items indicates that the window is open. You can also use the close icon in the title bar when the program is in Respond mode. The default on starting up is messages window open and controls window closed.

TEST CONTROLS

The program has several test controls, in the form of writeable and draggable icons. These are on the left-hand side of the message reporting window, and also in a separate test controls window. You can also experiment with the system area (border) of the windows. They will only have their normal effect when Respond mode is switched on. When it is switched off, they have no effect (except to report the poll code generated, subject to its reporting status).

RESPOND MODE

You can decide whether or not the program should respond to messages

referring to its own windows. The default on start-up is not to respond. Click the mouse on *Respond* in the menu to change this status. The respond status is shown by a tick next to the menu item, and an indicator at the bottom of the message reporting and test controls windows. Clicking Select or Adjust on one of the indicators when the program is responding turns Respond mode off.

To quit from the application use the *Quit* option in the menu.

```
  10 REM >!RunImage
  20 REM Program    Message Monitor
  30 REM Version    A 1.01
  40 REM Author     A.Phillipson
  50 REM RISC User September 1990
  60 REM Program    subject to copyright
  70 :
  80 EXIT%=FALSE
  90 SYS "Wimp_Initialise",200,&4B53415
4,"Message monitor"
 100 PROCloadwindows:PROCinitmenu
 110 PROCiconbar:mask%=0
 120 PROCopenw(mess%)
 130 DIM box% &39,pblk% &FF
 140 REPEAT
 150 SYS "Wimp_Poll",mask%,pblk% TO ins
t%
 160 IF FNdisplaying(inst%) PROCupdate(
inst%,pblk%!16)
 170 CASE inst% OF
 180   WHEN 1:PROCredraw
 190   WHEN 2:IF FNresp SYS "Wimp_OpenW
indow",,pblk%
 200   WHEN 3:IF FNresp PROCsw_win(!pbl
k%)
 210   WHEN 6:PROCcheck(!pblk%,pblk%!4,
pblk%!8,pblk%!12,pblk%!16,pblk%!20)
 220   WHEN 8:SYS "Wimp_ProcessKey",pbl
k%!24
 230   WHEN 9:PROCmenuselect(!pblk%,pbl
k%!4)
 240   WHEN 10:IF FNresp PROCscroll
 250   WHEN 17,18:IF pblk%!16=0 EXIT%=T
RUE
 260 ENDCASE
 270 UNTIL EXIT%:SYS "Wimp_CloseDown"
 280 END
 290 :
 300 DEF PROCiconbar
 310 !blk%=-1:blk%!4=0:blk%!8=0:blk%!12
=70:blk%!16=70:blk%!20=&303A:$(blk%+24)=
"!messages"
 320 SYS "Wimp_CreateIcon",,blk%
 330 ENDPROC
 340 :
 350 DEF PROCredraw:LOCAL more%
 360 SYS "Wimp_RedrawWindow",,pblk% TO
more%
 370 WHILE more%<>0
 380 SYS "Wimp_GetRectangle",,pblk% TO
more%
 390 ENDWHILE
 400 ENDPROC
 410 :
 420 DEF PROCcheck(mousex%,mousey%,but%
,win%,ic%,ob%)
 430 IF (but%=1 OR but%=4) AND win%=inf
o% SYS "Wimp_CreateMenu",-1
 440 IF (but%=16 OR but%=64) AND FNresp
 PROCstartdrag(win%,ic%)
 450 IF (but%=1 OR but%=4) AND ((win%=m
ess% AND ic%=25) OR (win%=cont% AND ic%=
4)) AND FNresp PROCmode
 460 IF but%=2 AND (win%=mess% OR win%=
cont%) AND FNresp SYS "Wimp_GetPointerIn
fo",,blk%:SYS "Wimp_CreateMenu",,menu%,!
blk%-100,blk%!4
 470 IF but%=2 AND win%=-2 SYS "Wimp_Ge
tPointerInfo",,blk%:SYS "Wimp_CreateMenu
",,menu%,!blk%-100,96+(44*6+24*2)
 480 ENDPROC
 490 :
 500 DEF PROCmenuselect(sel%,subsel%)
 510 CASE sel% OF
 520 WHEN 1:PROCsw_win(cont%)
 530 WHEN 2:PROCsw_win(mess%)
 540 WHEN 3:PROCstatus(subsel%)
 550 WHEN 4:PROCmode
 560 WHEN 5:EXIT%=TRUE
 570 ENDCASE
 580 SYS "Wimp_GetPointerInfo",,blk%
 590 IF blk%!8=1 SYS "Wimp_CreateMenu",
,menu%
 600 ENDPROC
 610 :
 620 DEF PROCsw_win(win%):LOCAL add%
 630 IF win%=cont% add%=menu%+52
 640 IF win%=mess% add%=menu%+76
 650 IF FNwindowon(win%) THEN
 660 PROCclosew(win%)
 670 !add%=(!add% AND (NOT 1))
 680 ELSE
 690 PROCopenw(win%)
 700 !add%=(!add% OR 1)
 710 ENDIF
 720 ENDPROC
 730 :
 740 DEF PROCmode
 750 menu%!124=(menu%!124 EOR 1)
 760 PROCsw_ic(mess%,25)
 770 PROCsw_ic(cont%,4)
 780 ENDPROC
 790 :
 800 DEF FNresp:=(menu%!124 AND 1)=1
 810 :
```

```
  820 DEF PROCstatus(code%)
  830 code%=24*code%+28
  840 dmenu%!code%=(dmenu%!code% EOR 1)
  850 ENDPROC
  860 :
  870 DEF FNdisplaying(code%)
  880 code%=24*code%+28
  890 =(dmenu%!code% AND 1)=1
  900 :
  910 DEF PROCscroll
  920 LOCAL width%,height%
  930 width%=pblk%!12-pblk%!4
  940 height%=pblk%!16-pblk%!8
  950 CASE pblk%!32 OF
  960 WHEN -2:pblk%!20-=width%
  970 WHEN -1:pblk%!20-=32
  980 WHEN 1:pblk%!20+=32
  990 WHEN 2:pblk%!20+=width%
 1000 ENDCASE
 1010 CASE pblk%!36 OF
 1020 WHEN -2:pblk%!24-=height%
 1030 WHEN -1:pblk%!24-=32
 1040 WHEN 1:pblk%!24+=32
 1050 WHEN 2:pblk%!24+=height%
 1060 ENDCASE
 1070 SYS "Wimp_OpenWindow",,pblk%
 1080 ENDPROC
 1090 :
 1100 DEF PROCupdate(poll%,action%)
 1110 LOCAL pointer%
 1120 FOR pointer%=7 TO 23 STEP 2
 1130 PROCwrite_n(mess%,pointer%-2,FNrea
d_n(mess%,pointer%))
 1140 PROCwrite_t(mess%,pointer%-1,FNrea
d_t(mess%,pointer%+1))
 1150 NEXT
 1160 PROCwrite_n(mess%,23,poll%)
 1170 CASE poll% OF
 1180 WHEN 0:PROCwrite_t(mess%,24,"Null
instruction")
 1190 WHEN 1:PROCwrite_t(mess%,24,"Redra
w window request")
 1200 WHEN 2:PROCwrite_t(mess%,24,"Open
window request")
 1210 WHEN 3:PROCwrite_t(mess%,24,"Close
 window request")
 1220 WHEN 4:PROCwrite_t(mess%,24,"Point
er leaving window")
 1230 WHEN 5:PROCwrite_t(mess%,24,"Point
er entering window")
 1240 WHEN 6:PROCwrite_t(mess%,24,"Mouse
 clicked")
 1250 WHEN 7:PROCwrite_t(mess%,24,"User
drag box")
 1260 WHEN 8:PROCwrite_t(mess%,24,"Key p
ressed")
 1270 WHEN 9:PROCwrite_t(mess%,24,"Menu
selection")
 1280 WHEN 10:PROCwrite_t(mess%,24,"Scro
ll request")
 1290 WHEN 11:PROCwrite_t(mess%,24,"Losi
ng caret")
 1300 WHEN 12:PROCwrite_t(mess%,24,"Gain
ing caret")
 1310 WHEN 13,14,15,16:PROCwrite_t(mess%
,24,"Unused instruction")
 1320 WHEN 17:PROCwrite_t(mess%,24,"User
 message (&"+STR$~(action%)+")")
 1330 WHEN 18:PROCwrite_t(mess%,24,"User
 message recorded (&"+STR$~(action%)+")"
)
 1340 WHEN 19:PROCwrite_t(mess%,24,"User
 message acknowledge")
 1350 ENDCASE
 1360 ENDPROC
 1370 :
 1380 DEF PROCloadwindows
 1390 DIM blk% 984,ind% 10000
 1400 J%=ind%
 1410 blk%!0=0:blk%!4=424
 1420 blk%!8=1090:blk%!12=980
 1430 blk%!16=0:blk%!20=0
 1440 blk%!24=-1:blk%!28=&7F05110F
 1450 blk%!32=&1070207:blk%!36=&C0103
 1460 blk%!40=0:blk%!44=-556
 1470 blk%!48=1090:blk%!52=0
 1480 blk%!56=&13D:blk%!60=&3000
 1490 blk%!64=1:blk%!68=0
 1500 blk%!72=FNind("Messages received b
y message monitor")
 1510 blk%!76=-1:blk%!80=25
 1520 blk%!84=28:I%=blk%+88
 1530 PROCicon(66,-332,206,-216,&1700632
F,"Drag me","s!messages")
 1540 PROCicon(14,-100,266,-52,&C7003335
,"Oldest message:","")
 1550 PROCicon(14,-496,266,-448,&C700333
5,"Latest message:","")
 1560 PROCicon(264,-56,420,-8,&C700313D,
"Poll code","")
 1570 PROCicon(419,-56,1070,-8,&C700313D
,"Meaning (user message action code)","
)
 1580 FOR i%=0 TO 9
 1590  PROCicon(264,-100-44*i%,420,-52-4
4*i%,&700313D,"  ","")
 1600  PROCicon(418,-100-44*i%,1070,-52-
44*i%,&700313D,STRING$(34," "),"")
 1610 NEXT i%
 1620 PROCicon(266,-548,1070,-504,&C7003
137,"Responding to messages about this w
indow","soptoff,opton")
 1630 PROCicon(18,-188,254,-140,&700F13D
,"I am writeable","")
 1640 PROCicon(18,-408,254,-360,&700F13D
,"I am writeable","")
 1650 SYS "Wimp_CreateWindow",,blk% TO m
ess%
```

DABS PRESS

22 Warwick Street
Prestwich
Manchester
M25 7HN

061-773 8632

Access VISA

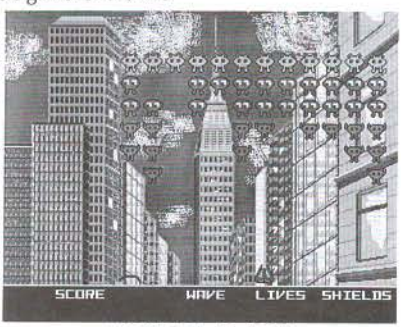
NEW

Alien Invasion

from Alien Images, the games division of Dabs Press

You all know the classic invaders game, but Dabs Press brings you a totally customisable game for the world's fastest micro. *You* can create new types of invader and add different scenery - you can even insert your own!!

With sampled sound throughout, speed control and over 1000 password protected waves, this is *the* best invaders game for the Arc.



PRICE £14.95

Psion LZ: A Users' Guide to OPL

The Psion Organiser hand held computer and its programming language - OPL, are now explained in full in our latest publication, by leading computer author, Ian Sinclair.

This book is a must for all dedicated Psion Organiser users and explains in detail how to get the best fom the various built in utilities and programming language.

Topics covered include:

- Setting up the machine
- Stopwatch
- Notepad
- Variables
- Filing Techniques
- The PC Link

AVAILABLE NOW

PRICE £12.95

NEW

ArcDFS

DFS for the Archimedes/A3000

Now ready for *immediate* despatch ArcDFS is a full Archimedes implementation of the BBC DFS filing system, which allows you to read and write BBC-compatible discs on your Archimedes or A3000. The application will read, write, format, copy, delete, title and perform all other functions on 3.5" or 5.25" discs formatted in Acorn, Solidisk or Watford formats (single or double density). Density and format seeking is automatic.

All operations can be performed from the RISC OS desktop, with the DFS disc appearing on the icon bar in the normal way, and displaying its files in a window. Alternatively, the facilities are all available as 'star' commands. ArcDFS is fully compatible with the BBC 6502 emulator. Many additional features are built into the system such as the ability to set up virtual DFS drives on an ADFS hard or floppy disc, and a DFS ramdisc.

PRICE £29.95

ARCHIMEDES FIRST STEPS

Beginners Guide to the Archimedes & BBC A3000

This book is the perfect introductory guide to the Archimedes, to guide you through the first few months of ownership, acting as an easy-to-read supplement to the User Guide.

The book describes in detail how to put the RISC OS Desktop to best use, and also documents the programs on the Applications Discs provided with the machine.

But the book also goes beyond this and describes the sort of software and hardware additions available to the Archimedes owner, and how to choose and install them.

The many features of this book include:

- Applicable to all Archimedes with RISC OS
- Using the Desktop, RAMdisc and ADFS
- Edit, Paint, Draw and Maestro
- The Task Manager
- The BBC and PC emulators
- Hardware and software additions
- Illustrated throughout

AVAILABLE NOW!

PRICE £9.95

ONE OF OUR BEST SELLERS

Call *NOW* for a free catalogue containing full details of ALL our products (specify Arc or BBC). Access/Visa/Mastercard accepted. Official and trade orders welcome. Prices include 15% VAT (on software) and UK postage. Foreign deduct VAT but add £2.50 Europe/surface, £12 airmail. Fax orders or enquiries welcome on **061-773 8290.** Callers welcome.

```
 1660 blk%!4=780:blk%!8=724
 1670 blk%!28=&7F01010F
 1680 blk%!44=-200:blk%!48=725
 1690 blk%!72=FNind("Message monitor tes
t controls")
 1700 blk%!80=30:blk%!84=5:I%=blk%+88
 1710 PROCicon(22,-132,162,-12,&1700630F
,"Drag me","s!messages")
 1720 PROCicon(562,-132,702,-12,&1700630
F,"Drag me","s!messages")
 1730 PROCicon(200,-60,532,-12,&700E13D,
"I am writeable","")
 1740 PROCicon(200,-132,532,-84,&700E13D
,"I am writeable","")
 1750 PROCicon(12,-188,712,-144,&C701313
7,"Responding to messages about this win
dow","soptoff,opton")
 1760 SYS "Wimp_CreateWindow",,blk% TO c
ont%
 1770 blk%!8=618:blk%!12=992
 1780 blk%!28=&84010012:blk%!36=&20E0C
 1790 blk%!44=-1024:blk%!48=1280
 1800 blk%!72=FNind("About this program"
)
 1810 blk%!80=13:blk%!84=8:I%=blk%+88
 1820 PROCicon(154,-52,614,-4,&700303D,"
Messages","")
 1830 PROCicon(154,-104,614,-56,&700313D
,"Wimp message monitor","")
 1840 PROCicon(154,-156,614,-108,&700313
D,"A. Phillipson","")
 1850 PROCicon(154,-208,614,-160,&700313
D,"1.01 Sept 1990","")
 1860 PROCicon(14,-52,154,-4,&17003231,"
Name:","")
 1870 PROCicon(14,-104,154,-56,&17003231
,"Purpose:","")
 1880 PROCicon(14,-156,154,-108,&1700323
1,"Author:","")
 1890 PROCicon(14,-208,154,-160,&1700323
1,"Version:","")
 1900 SYS "Wimp_CreateWindow",,blk% TO i
nfo%
 1910 ENDPROC
 1920 :
 1930 DEF PROCicon(x0%,y0%,x1%,y1%,flags
%,data$,valid$)
 1940 I%!0=x0%:I%!4=y0%:I%!8=x1%
 1950 I%!12=y1%:I%!16=flags%
 1960 IF flags% AND &100 THEN
 1970  I%!20=FNind(data$)
 1980  IF valid$<>"" THEN I%!24=FNind(va
lid$) ELSE I%!24=-1
 1990  I%!28=LEN(data$)+1
 2000 ELSE
 2010  $(I%+20)=data$
 2020 ENDIF
 2030 I%+=32
 2040 ENDPROC
 2050 :
 2060 DEF FNind(string$)
 2070 LOCAL i%:i%=J%:$J%=string$
 2080 J%+=LEN(string$)+1:=i%
 2090 :
 2100 DEF PROCinitmenu
 2110 DIM menu% 171,dmenu% 483
 2120 $menu%="Messages"
 2130 menu%!12=&70207:menu%!16=9*16
 2140 menu%!20=44:menu%!24=0
 2150 menu%!28=2:menu%!32=info%
 2160 menu%!36=&7000021
 2170 $(menu%+40)="Info"
 2180 menu%!52=0:menu%!56=-1
 2190 menu%!60=&7000021
 2200 $(menu%+64)="Controls"
 2210 menu%!76=1:menu%!80=-1
 2220 menu%!84=&7000021
 2230 $(menu%+88)="Messages"
 2240 menu%!100=0:menu%!104=dmenu%
 2250 menu%!108=&7000021
 2260 $(menu%+112)="Report"
 2270 menu%!124=2:menu%!128=-1
 2280 menu%!132=&7000021
 2290 $(menu%+136)="Respond"
 2300 menu%!148=&80:menu%!152=-1
 2310 menu%!156=&7000021
 2320 $(menu%+160)="Quit"
 2330 PROCdisplaymenuinit
 2340 ENDPROC
 2350 :
 2360 DEF PROCdisplaymenuinit
 2370 LOCAL display%,offset%
 2380 $dmenu%="Poll codes"
 2390 dmenu%!12=&70207
 2400 dmenu%!16=11*16
 2410 dmenu%!20=44:dmenu%!24=0
 2420 dbase%=dmenu%+28
 2430 FOR display%=0 TO 18
 2440 offset%=dbase%+(display%*24)
 2450 !(offset%)=1
 2460 !(offset%+4)=-1
 2470 !(offset%+8)=&7000029
 2480 $(offset%+12)=STR$(display%)
 2490 NEXT
 2500 !(dbase%+(0*24))=0
 2510 !(dbase%+(18*24))=&81
 2520 ENDPROC
 2530 :
 2540 DEF PROCgetw(win%):!blk%=win%
 2550 SYS "Wimp_GetWindowState",,blk%
 2560 ENDPROC
 2570 :
 2580 DEF PROCopenw(win%)
 2590 PROCgetw(win%):blk%!28=-1
 2600 SYS "Wimp_OpenWindow",,blk%
 2610 ENDPROC
 2620 :
 2630 DEF PROCclosew(win%):!blk%=win%
```

```
 2640 SYS "Wimp_CloseWindow",,blk%
 2650 ENDPROC
 2660 :
 2670 DEF FNwindowon(win%)
 2680 PROCgetw(win%)
 2690 =((blk%!32) AND %10000000000000000
)>0
 2700 :
 2710 DEF PROCsw_ic(win%,ic%)
 2720 !blk%=win%:blk%!4=ic%
 2730 blk%!8=&200000:blk%!12=0
 2740 SYS "Wimp_SetIconState",,blk%
 2750 ENDPROC
 2760 :
 2770 DEF PROCwrite_t(win%,ic%,text$)
 2780 !blk%=win%:blk%!4=ic%
 2790 SYS "Wimp_GetIconState",,blk%
 2800 $(blk%!28)=text$
 2810 !blk%=win%:blk%!4=ic%
 2820 blk%!8=0:blk%!12=0
 2830 SYS "Wimp_SetIconState",,blk%
 2840 ENDPROC
 2850 :
 2860 DEF PROCwrite_n(win%,ic%,num)
 2870 PROCwrite_t(win%,ic%,STR$(num))
 2880 ENDPROC
 2890 :
 2900 DEF FNread_t(win%,ic%)
 2910 LOCAL text$
 2920 !blk%=win%:blk%!4=ic%
 2930 SYS "Wimp_GetIconState",,blk%
 2940 =$(blk%!28)
 2950 :
 2960 DEF FNread_n(win%,ic%)=VAL(FNread_
t(win%,ic%))
 2970 :
 2980 DEF PROCstartdrag(win%,ic%)
 2990 LOCAL mousex%,mousey%
 3000 SYS "Wimp_GetPointerInfo",,blk%
 3010 mousex%=!blk%:mousey%=blk%!4
 3020 !box%=win%:box%!4=ic%
 3030 SYS "Wimp_GetIconState",,box%
 3040 PROCgetw(win%)
 3050 !box%=win%:box%!4=5
 3060 box%!8=(blk%!4-blk%!20)+box%!8
 3070 box%!12=(blk%!16-blk%!24)+box%!12
 3080 box%!16=(blk%!4-blk%!20)+box%!16
 3090 box%!20=(blk%!16-blk%!24)+box%!20
 3100 box%!24=blk%!4-(mousex%-box%!8)
 3110 box%!28=blk%!8-(mousey%-box%!12)
 3120 box%!32=blk%!12+(box%!16-mousex%)
 3130 box%!36=blk%!16+(box%!20-mousey%)
 3140 SYS "Wimp_DragBox",,box%
 3150 ENDPROC
```

RU

PD ONLY £1 PER DISC

Arcaynia Public Domain has a huge selection of some 200 discs which are still all available at £1 each.

Graphic Images -Artistic Masterpieces and Brilliant full colour digitisations. From 'Outer Space' to 'Home & Away' we've got everything.

Utilities -Why spend a fortune on commercial applications when we can cater for your needs at a fraction of the cost.

Demos -Stretching the archie to its full capacity we have the best demos around.

D.T.P. -Amazingly cheap Outline Font, and Draw Clip Art to give professional quality to any document.

Sound -A complete range of the popular Stracker modules, and BOOK samples of your favourite Music.

Games -Desktop and Arcade Games at an affordable price.

If you want to purchase now, here is a mini selection;

A05 Colour Digit -Home & Away.	D01 5 Outline Fonts (Very Good.)
A11 Colour Digit -Star Trek.	D07 Scanned Xams Sprites ('50)
E09 Stracker 9 -Toccatta/SaySaySay+5more	K01 ArcBBS -run your own BBS
B20 Samples Prisoner Theme music	K04 Hyper Desktop Database
C01 10 Desktop Games	F01 Hugos Machine Code Demos 1-5

If you want a catalogue it is on a Demo disc which can be brought for £1, send a coin if you prefer.

Arcaynia Public Domain
PO BOX 1927
Sutton Coldfield
B74 3QZ

Home & Business Programs from Apricote Studios

The Account Book

Comprehensive small business accounts to trial balance. VAT approved. Absolutely the easiest program to use, with neat final books and hundreds of reports. No entry limits. "The Account Book gets first prize for both price and performance"- comparison of different business programs in Micro User-July '89. "A true user-friendly program. If you buy these packages you will not be disappointed"-Beebug-Oct '88 & Dec '89. Just **£27.95.**

The Invoice Program

Link with The Account Book or use independently. 700 customer database, Invoices, Statements, Stock presets, Debtor lists, Mail shot labels and loads more. **£27.95.** Purchase The Account Book and The Invoice Program together for **£49.95.**

Personal Accounts

10 on-line accounts, 48 income/payment headings, 20 direct debits. Scrolling entries with the best edit, search and reporting facilities. **£14.95.** Full refund if you don't agree.

Apricote Studios
2 Purls Bridge Farm
Manea
Cambs
PE15 OND

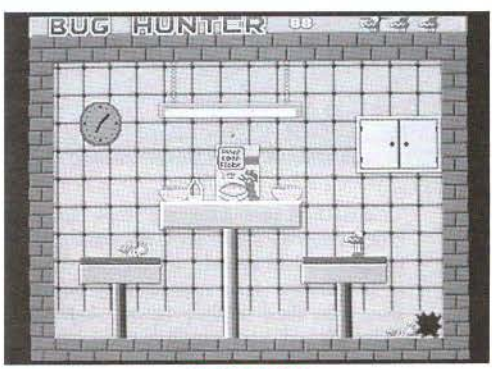
Tel: 035 478 432 for information, help or to order.

ARCade

A roundup of the latest games for the Arc by Peter Rochford

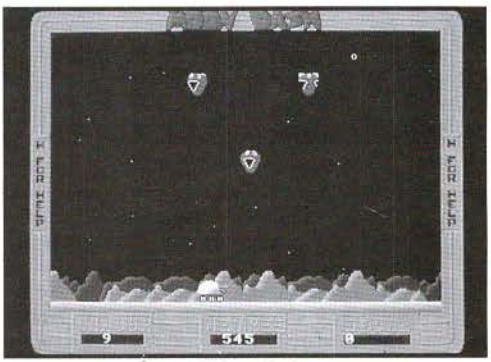
New games for the Arc and A3000 are still coming along at a steady rate I am pleased to report. This month we have eight recent releases lined up. A real mixed bag that varies greatly in quality and asking price.

Minerva continues to churn out new games with a fair degree of regularity, despite the fact that the company tells me it is only a sideline and that it is more interested in its serious software. There are two new games from them now available. First off we have a two-game package featuring *Bug Hunter* and *Moondash*, priced at £14.95. Both these games were written in Basic and compiled using Dabs Press' ABC Compiler.



Bug Hunter

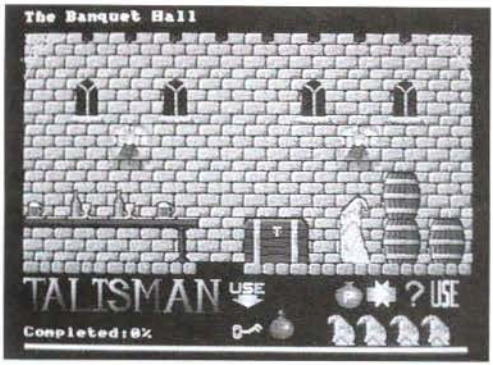
Bug Hunter finds you in control of a strange looking creature that has an obsessive dislike of insects and creepy crawlies. Your task is to guide the little horror around the rooms of a house, picking up objects as you go and dropping them on the bugs in an effort to exterminate them. Walls and obstacles present no problems to our hero as he has suckered feet and can go just anywhere. Of course, the bugs do have the ability to fight back, but I wouldn't say that they present much of a challenge. And that as they say is that. Not what you call enthralling by any means, and the sound and graphics have not stretched the imagination of the programmer, nor indeed the capabilities of the machine.



Moondash

On to the other game in the package, *Moondash*. This is just a version of the old classic Moonbuggy, that has appeared in one form or another on just about every computer I have ever laid hands on. The object of the game is to guide a buggy along the surface of the moon, jumping over the obstacles and shooting the aliens dropping down from above. The graphics are no better than those I have seen on eight-bit machines, and the sound is equally poor. Perhaps I have been a bit over scathing about this package when you consider the price. But on a machine like the Archimedes you hope that a game will take reasonable advantage of the power and facilities of the beast. Sadly this one doesn't. Perhaps these two games would appeal to the very young by virtue of their simplicity, but even then I think that youngsters would soon get bored with them.

Talisman (£14.95) is the other release from Minerva. This is an arcade adventure of the type where you guide your man around on a quest to recover a selection of objects. In this case the objects are parts of the broken Talisman, which have to be

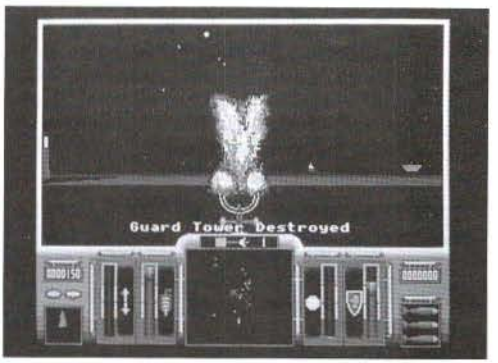


collected and reassembled so that you can save the land from the evil wizard, Zaldremon. Along the way are the usual hazards and puzzles to solve and a variety of objects to acquire and use to help you achieve your goal. All pretty standard stuff this, with nothing new on offer that we haven't seen before, in fact a typical arcade adventure with a scenario not that different from a host of others. Graphics are reasonable as is sound. I can't summon up much enthusiasm for this one at all, so I won't waste the space.

Now we come to something much better. Fourth Dimension are building a fine reputation for themselves on the Arc. In particular, games like E-Type and Holed Out from their ace programmer Gordon Key have provided some of the best fun yet for Arc gamesters. Now, from the same author, we have *Apocalypse*, which surpasses everything he has yet done by a large margin. Apocalypse (£29.95) is a frenetic shoot-em-up featuring 3D vector graphics of the kind that we all know the Arc is more than capable of.

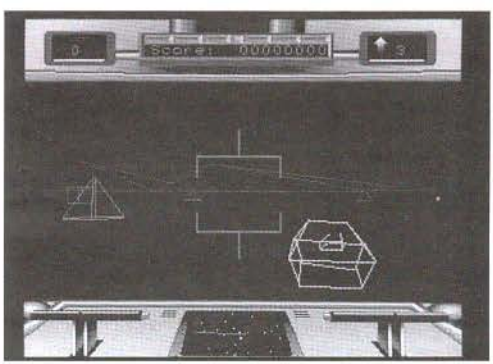
The game places you on the surface of a hostile planet where your task is simple - shoot anything and everything, before it shoots you! Your space ship can fly or travel along the ground and even fly backwards. There is plenty of action to keep you occupied both on the ground and in the air, with things coming at you from all directions. Some of them have the weirdest shapes and names, for example, the Electron Grinder. You must destroy as much of the planet's buildings and space craft before you can leave and go on to the next planet.

You are assessed at the end of your mission, and poor performance is met with a scathing dressing down from the panel of the Royal Guild of Spacers. I can't in the space of this review do full justice to this game. Simply, this is the best release yet for the Arc by absolutely miles. Stunning graphics, stunning sound and masses of action. Brilliant!



Another new offering from the Fourth Dimension is *Man-At-Arms* (£19.95). This is yet another arcade adventure. Your task is to plunder four castles and destroy all that you find within them. Armed with your sword you must slay a variety of adversaries and avoid a plethora of hazards. Along the way there are objects to help you, and some that appear to but don't. Sound is acceptable, almost, and the graphics are what you would expect on a Beeb, but with more colours. I won't dally long on this one folks. For *Man-At-Arms* read Repton. Yep, this is Repton by another name. The graphics are so similar in just so many ways and the gameplay has much in common. If you are a Repton fan therefore and have got bored with the little green man, here is a new hero for you to get acquainted with. Not my scene I'm afraid and a disappointing release from Fourth Dimension.

A new name to the Arc is Worra Software and their first release is *Worra Battle* (£17.20). This is an arcade tank battle game that is simple but fiendishly addictive. It is a straightforward shoot-'em-up in which you control a tank on a battlefield and must destroy all others. You have plenty of obstacles to steer around and hide behind to help you stay in one piece. But it ain't as easy as you think! Graphics are pretty ordinary but the fun of the game makes up for any shortcomings in that respect. Sound is quite minimal but effective. I really got quite hooked on this game. It is strange how some games that are so simple can really grab you. I tried this game out on a few youngsters and they loved it because the object of the game was not too complicated and the controls were easy. Recommended (by the way, the opening music in this game is superb).



Worra Battle

You may remember that in past editions of Arcade, I have waxed lyrically about Magnetic Scrolls adventures such as Fish! and Corruption. Well joy-of-joys, we now have two new ones. These are *The Pawn* and *Guild Of Thieves* (£24.95 each). These are both classics on other machines and most welcome in my opinion for adventurers on the Archimedes. I do not intend to give in-depth descriptions of these games as space does not permit. Suffice to say, that if you are an adventure player, you cannot afford to miss either of these. They feature excellent plots with plenty of detailed graphics and the usual fine Magentic Scrolls parser. Buy them both, there are none better!

On The Path
0/1
Files
Text
Goodies
Specials
thick, mushy beard. As he passes you he let out a hollow, cackling laugh and you felt a sharp blow on the back of your head. Then you woke up.
You now notice that you are wearing a silver wristband which covers your forearm.
On The Path
You are on a gravel path leading north to two snow capped mountains. To the west is a dying forest. Eastward is a vast, grassy plain and the path also continues southward.

The Pawn

Finally, CDS Software has joined the growing number of software houses dipping their toe in the water, with the release of a quiz game for the Arc. *Sporting Triangles* (£24.99) is a computer version of the TV quiz game. Quite simply, this is a straightforward question-and-answer session on a variety of sporting subjects. You can compete against the computer or a number of others.

You either love or hate quiz games. I like Trivial Pursuit, but my knowledge of sport is minimal, so this game didn't do a lot for me. Games of this type that concentrate on one subject are always of limited appeal. The graphics are not exceptional for the Arc, but pleasing. Not so pleasing is the drawn out rigmarole in playing the game. The dice spins for an inordinately long time and questions seem a long time coming.

This game has to be a matter of personal taste. If you are into sport then you will probably enjoy it, but I feel it is a bit pricey. Personally, I am waiting for someone to do Blockbusters on the Arc. That I WOULD like! That's it for this month. See you soon!

***NOTE:** All games reviewed here are available through BEEBUG. All prices quoted include VAT.* RU

Beebug Hardware Upgrades for the A3000

BEEBUG A3000 Disc Buffer

An exciting new release for the A3000 allowing the connection of 5.25" drives to the A3000. Some of the features include:

- Connector for BBC-type 5.25" & 3.5" drives
- On board switches allow drive mapping to be changed. eg. The internal drive could be made drive 1, and an external drive as drive 0 - ideal for the PC emulator
- Whole interface contained on an internal card
- Easy to fit, supplied with full instructions
- Will work with most drives that have an internal Power Supply Unit
- Can read DFS files with optional DFS Reader
- Internal and external drives can be double stepped to read 40 track discs
- Full 12 months warranty

0135C A3000 buffer £39.95
0102B DFS reader £ 9.90

BEEBUG A3000 Memory Upgrades ★

The BEEBUG A3000 memory upgrades are available in either 1 or 3 Mb versions and are easy to fit by the user. This will give a total of either 2Mb or a massive 4Mb of memory.

By using the latest surface mount technology we have achieved a board size of a mere 256x46 mm.

The 1 Mb board can be easily upgraded to 3 Mb at any time by the user, unlike some other boards on the market.

- Easy to install with fitting instructions provided
- Full 12 months warranty
- 1 Mb expandable to 3Mb by the user
- Uses latest surface mount technology
- Free fitting (by appointment) if required

0130D Beebug A3000 Memory 1Mb £149.95
0131D Beebug A3000 Memory 3Mb £349.95
0132C 1Mb to 3Mb upgrade £209.95

★ **NEW lower prices!**

RISC User
Volume 3 Special Disc

To celebrate the successful completion of the third year of publication of RISC User magazine we will be launching a Volume 3 Special Disc.

The Special Disc will contain a selection of the best programs published throughout the ten issues of volume 3, updated where appropriate, plus a selection of *new* and *specially written* programs and applications. We expect the disc to contain:

- Enhanced versions of popular utilities
- A selection of useful applications
- Exciting and original graphics displays
- A selection of the best music files
- A graphically superb and entertaining game
- ArcScan Volume 3 update

More details of this disc, packed with goodies for all Archimedes users, will be revealed next month.

The Volume 3 Special disc will be available with the first issue of Volume 4 at a special members' price of £4.75 (non-members' price £15.00).

Introducing C (Part 3)

Dec McSweeney, an experienced C programmer, takes over our series on C and discusses the principal features of this popular programming language.

The language C has been around now for some considerable time and has proved very popular with programmers, particularly for writing operating systems and other 'low-level' applications. It can be used equally well in place of Basic and ARM assembler for almost any application. This and further articles in the next few issues will introduce programmers familiar with Basic to the elements of the language, and give them a taste of its capabilities. If you have any doubts about the benefits of compiled languages (like C) over interpreted ones (like Basic), or are unfamiliar with the concepts of compilation and linking I would refer you to David Spencer's introductory articles in RISC User Volume 3 Issues 7 & 8.

THE BASIC ELEMENTS

One fundamental difference exists between Basic and C. In Basic, programs consist of statements. Enhanced versions such as BBC Basic allow statements to be grouped in subroutines (PROC and FN), but these are optional. In C, programs always consist of functions, referenced by name. Functions are self-contained sets of program instructions which (usually) take one or more parameters and (generally) return a value - much like the Basic functions: SQR(A) which returns the square root of A, LEFT$(NAME$,4) which returns the first 4 characters of NAME$, and FNmyfunc(p1,p2,p3) which does something using p1, p2 and p3.

Let's take a look at a simple C program:

```
/* Hello.c - the source code */
#include <stdio.h>
int main(void)
{
  printf("Hello RISC Users everywhere!\n");
}
```

There are several points to note here:

- C does not use line numbers. Users of BBC Basic will probably not appreciate how important line numbers are to lesser versions of the Basic language where GOTO and GOSUB are the only flow-control instructions available.
- Lower case characters are used for C keywords and (conventionally) for user-defined words such as variable names and function names.
- A number of non-alphabetic characters such as curly brackets (braces), hash signs (#) and asterisks have special meanings in C. Stay tuned, all will be revealed!

Taking the program line by line, we find the following:

Line 1 in the source code above is enclosed in *comment delimiters*. Anything which appears between the '/*' and the '*/' is ignored by the compiler. Humane programmers use this facility to explain their code to those who come after them.

Line 2 starts with the '#' character. This makes it a *preprocessor* directive. The preprocessor is the first phase of the compilation (I expect you worked that one out). This directive tells the preprocessor to find a so-called *header file* known as *stdio.h* and treat it as part of this program. This file, as you might guess, contains information relating to the standard input and output routines (hence its name, *stdio* meaning standard I/O). Archimedes C compilers, on finding this directive, would normally look for a file 'stdio' in directory 'h', just as 'hello' would be found in directory 'c' (see program). The naming convention (though the opposite way round to normal ADFS conventions) allows portability between C compilers running under different operating systems.

Line 3 is the name of our function - *main*. All C programs must have a function called *main()*, and execution of the program starts here. The words *int* and *void* will be explained in due course.

Line 4 is an opening brace, marking the actual start of the function definition. Braces are used in C to allow a group of items, such as statements, variables or data, to be treated as a single item.

Line 5 is the only statement in our program. Note that *printf* is NOT a C command! It is a call to a library function called *printf()*, of which much more will be said later. The character pair '\n', by the way, represents 'new line', but note how this is also included within the quotes. Note how the statement ends with a semi-colon. This is another feature of C.

Line 6 marks the end of the function, and in this case the end of the program.

This source code is used as input to the C compiler. The pre-processor copies in any #included files (and much more besides!), the expanded file is input to the compiler proper which will (compilation errors permitting) produce an object file which must be linked to produce a program. Further details need not concern us here, but may be found in the first two articles in this series and in your compiler's documentation.

C Program Listing

The examples of C in this series follow the standard conventions of three spaces for each successive indent. This may not be obvious in the magazine listings because of the proportionally spaced font used. However, this allows longer statements to be accommodated without splitting.

To run the compiled program, you could type "Hello" at the * prompt (assuming you were in the appropriate directory, or the compiled object was in your library directory), or double-click the icon for the compiled program from the Desktop. In either case the friendly message:

```
Hello RISC Users everywhere!
```

is printed.

A number of factors, such as where the code is actually put, depend on the compiler. In this series, implementation-dependent factors will be ignored as far as possible.

Hello.c is a very simple program; it uses no variables and there is no flow control. We can enhance the illustration by changing the function thus:

```
/* hello.c - the new improved version */
#include <stdio.h>
int main(void)
{
  int x;
  for ( x = 0; x < 10; x = x + 1)
    printf("Hello RISC user number %d\n", x);
}
```

The first line after the opening brace, *int x;* defines a variable. All variables in C must be defined before they can be used, so that the compiler can reserve space for them in the object program, whereas in Basic, variables other than DIM declarations are called into being when they have a value assigned to them. Thus, the Basic statement:

```
X = 2 * Y
```

will give rise to an error if Y does not already exist, but creates X if necessary. Not so in C! The semi-colon terminates variable definitions as well as statements. As in Basic, variable types include *int* (integer, or whole number), *float* (floating point), and *char* (a single character; strings are dealt with as 'arrays of type char'). Functions must also have a type according to the nature of the data they return, just as LEFT$() is a Basic string function, INSTR() returns an *int*, and SQR() a *float*.

The next line features a construction dear to any Basic programmer's heart - the FOR-NEXT loop (see below).

The *printf* function now has a more complicated structure than hitherto,

containing as it does two arguments: a string ("Hello...\n") known as the conversion string, and a variable, *x*. The string contains literal text which is printed as it appears, plus formatting information to control the conversion (i.e. the format) of *x*. The '%d' tells the function to output its next argument as a decimal integer at this point on the printed line. Like Basic's PRINT statement, *printf()* is a complicated beast which will be discussed in more detail as we proceed.

ITERATION - THE FOR LOOP

In C, *for()* works in very much the same way as the Basic equivalent, but is much more flexible. The general format is:

```
for ( expr1; expr2; expr3 )
  statement
```

Note that no NEXT is required. statement could be a single statement which would then be followed by a semicolon, or a group of statements enclosed in braces. The brackets contain three expressions, separated by semi-colons. *expr1* sets up the starting condition(s): *expr2* is evaluated on each iteration, and *expr3* is the 're-initialiser', which is performed after each iteration. The loop terminates when the second expression evaluates to FALSE (i.e. the loop is performed while the second expression is TRUE). So the Basic equivalent of the *for()* loop in the example above is:

```
FOR N%=0 TO 9 STEP 1
PRINT "Hello RISC user number "N%
NEXT
```

The loop is performed while *x* (or *N%*) is less than 10, hence 'TO 9' is its Basic equivalent. *x* and *N%* will both be 10 when the programs exit from their respective loops. However, unlike a FOR-NEXT loop in Basic, a *for()* loop in C will never be executed (even the first time) if the terminating condition *expr2* is FALSE to start with.

In C, expressions can be much more complicated than in Basic. Here is an example:

```
for ( x = 0, y = 1023; y >= 0 && point(x,y) == 0;
      x++, y-- )
```

Here, there are two parts to the first and third expressions, and the central expression is a compound condition involving a call to a function! Note the lack of a terminating semi-colon, by the way - *for()* is a preamble to a statement or group of statements, rather than a statement in its own right.

Let's look at this line in detail, just to get a feel for the notation.

for (x = 0, y = 1023 assigns starting values to *x* and *y*. The comma separator is used rather than a semi-colon, as both assignments form part of *expr1*.

y >= 0 && point(x,y) == 0 can be expressed as 'while y is greater than or equal to 0 and the function *point(x,y)* returns the value 0'. The double ampersand (&&) is the logical AND operator. In C, '==' serves as the equality test (IS equal to), as opposed to the single '=' (BECOMES equal to), for assigning values. The commonest error made by programmers in C is to confuse the two (especially by those brought up on Basic). The function call *point(x,y)* is evaluated after the test on y, and only if it is true (in Basic, both logical components would be evaluated regardless of the value of the first). This can be important, for example, if the function relies on x and y lying within legal boundaries (since x is incremented and y decremented together, it is only necessary to test y which has a more limiting range than x - 0 to 1279).

Lastly, '*x++, y—*' is the 'increment' at the end of each loop. The notation simply means 'add 1 to x, subtract 1 from y'. Let's assume that *point()* is similar to Basic's POINT instruction, which coupled with the limits on x and y suggests a screen-oriented operation. So to translate the statement into English, it would appear that the programmer wants to move down the leading diagonal (top left -

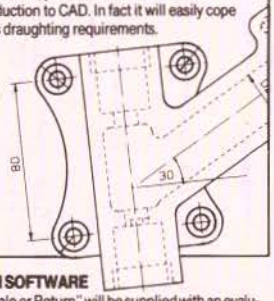
TECHSOFT

CAD AND CAD / CAM SOFTWARE FOR THE ARCHIMEDES / A3000

DESIGNER intro

COST EFFECTIVE CAD

DESIGNER INTRO is a powerful, yet easy to use 2D draughting system, based on its big brother DESIGNER (ARCHIMEDES). It is ideal for the production of high quality, accurate drawings, particularly when linked to a plotter. It makes light work of all the difficult areas of CAD, such as true blending arcs and tangents, simple deletion of part lines and arcs, automatic hatching, etc. Further features include ellipses, dimensioning, text, move, rotate, mirror image, alter size, pan, zoom, etc. DESIGNER INTRO is an ideal introduction to CAD. In fact it will easily cope with all of most peoples draughting requirements.

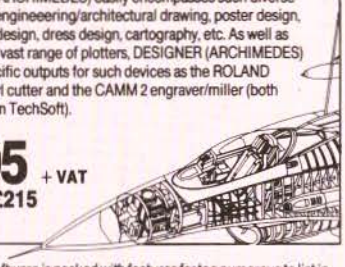


£75 + VAT
Overseas **£95**

DESIGNER (ARCHIMEDES)

MORE THAN JUST DRAUGHTING

DESIGNER (ARCHIMEDES) offers a range of features that go well beyond just draughting. As well as a wide range of draughting options, it also provides some of the most comprehensive text (including font/symbol design), drawing manipulation and editing capabilities available. Additionally, a 3D effects option allows "3D" extrusions in a variety of projections, and wire frame solids of revolution, to be created for quick and simple visualisation. The graphic design capability of DESIGNER (ARCHIMEDES) easily encompasses such diverse activities as engineeering/architectural drawing, poster design, logo or sign design, dress design, cartography, etc. As well as supporting a vast range of plotters, DESIGNER (ARCHIMEDES) also has specific outputs for such devices as the ROLAND CAMM 1 vinyl cutter and the CAMM 2 engraver/miller (both available from TechSoft).

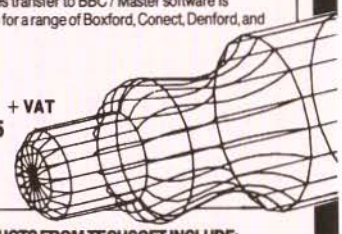


£195 + VAT
Overseas **£215**

CNC DESIGNER (ARCHIMEDES)

DRAW IT MAKE IT!

CNC DESIGNER (ARCHIMEDES) provides a means to realise the true potential of CNC lathes in education. It is an integrated CAD / CAM system comprised of the full DESIGNER (ARCHIMEDES) system plus a fully automatic post processor for CNC lathes. Simply draw a half profile of a component using the CAD routines, and a full CNC part program is automatically generated. Once generated the part program is transferred to the lathe's own software for manufacture. Simple or complex components, including part arcs, screwthreads, boring, even ellipses can be easily designed and realised by students of all ages. In many cases transfer to BBC / Master software is possible. Available for a range of Boxford, Conect, Denford, and Emco lathes.



£345 + VAT
Overseas **£365**

■ **SALE OR RETURN SOFTWARE**
All orders marked "Sale or Return" will be supplied with an evaluation disc in addition to the main disc. If the software is returned in good condition, with the main disc still sealed, within 28 days, a full refund will be given.
(Anyone in education is welcome to have an evaluation copy to review for 28 days, free of charge.)

■ All our software is packed with features far too numerous to list in detail. Besides, no advertisement can show the most important feature - the simplicity of use that guarantees a short learning curve and rapid drawing / CNC file generation.

■ **ORDERING**
Cheque with order please, payable to TechSoft UK Ltd.
Add VAT at 15% of total. (Official educational orders welcome.)

■ **OTHER PRODUCTS FROM TECHSOFT INCLUDE:**
CAD and CAD / CAM software for the BBC B / Master series
CAD related computer peripherals
Plotters + accessories
Digitisers
Cutter plotters
Engraving machine

Full information is detailed in our Product Guide available on request.

TECHSOFT CAD/CAM SPECIALISTS

TechSoft UK Ltd.
Old School Lane, Erryrys, MOLD,
Clwyd CH7 4DA.
Tel: (082 43) 318 Fax: (082 43) 564.

bottom right) of the screen until a non-background colour is encountered or the bottom of the screen is reached. What he actually wants to do on the way is not shown!

While just the STEP clause is optional in Basic, *EVERYTHING* is optional in *for()*. If you examine a few C programs you will often see 'empty' *for* loops, where all the work is done in the 'reinitialise' expression (assuming *n* has been given a starting value already):

```
/* m emerges as factorial n, n becomes zero */

for ( m = 1; n > 0; m *= n--)
  ;
```

For clarity, the 'body' of the loop, namely the semicolon which must be present, is detached from the closing parenthesis. Beware, some programmers are less considerate to their readers. The notation '*=' may be familiar to Basic V programmers who can use the related '+=' and '-='. In general, the notation:

```
A <op>= B
```

expands to:

```
A = A <op> B
```

where <op> can be almost any binary (two-operand) operation. Obviously the designers of C were lazy typists!

Similarly, each of the three expressions of for() in parentheses is optional:

```
for( ; m < 10; ) /* no initialise required, reinitialise
                    within loop (not shown) */

for( ; ; )       /* start of an 'infinite' loop */
```

That should do for now. Next time we'll write a slightly more interesting program. RU

A Brief Aside

ADDING 1

Incrementing and decrementing variables by one occurs so often in programming that it gets its own operation in C, much as it does in most assembly languages (c.f. the 6502 INC and DEC instructions). In C, the operator can go before the variable (prefix) or after it (postfix). Prefix increment means 'add 1 to the current value, then use it'; postfix means 'use the current value then increment it'. For example:

```
x = 7;

y = 4 * ++x;     /* x is incremented first, so y becomes 32 */

z = y--;         /* z becomes 32, y becomes 31 */
```

• POINTS ARISING • POINTS ARISING • POINTS ARISING •

BANK SWITCHING (Volume 3 Issue 6)

In this article, we stated that there was no reason why you should not use more than two screen banks, provided that sufficient screen memory had been configured. In fact, VIDC can only access 480K of memory, so you are restricted to the number of banks that will fit into 480K. We are grateful to Richard Renwick for pointing this out to us.

ARC TO PSION (Volume 3 Issue 6)

The wiring diagram in Figure 1 for connecting the Comms Link to the Arc is correct, except that the larger plug (25-pin male) is more usually numbered from the right, and not the left as shown in the diagram. The positioning of the wires is correct, however.

MOUSE SPEED CONTROLLER (Volume 3 Issue 8)

There is an error in Listing 1. The variable *Mouse$Flag* should be set to some value in order that the error trap in the second line should prevent the application being installed twice. Unfortunately, the character we chose could not be represented in print! You should therefore amend lines 2 and 3 to read:

```
If "<Mouse$Flag>" = "xxx" then error
   !Mouse is already running
Set Mouse$Flag xxx
```

where xxx can be any character or string of characters you choose. RU

PRODUCT NEWS FOR A USERS!

SCSI CARD AND DRIVE

Everything you need to upgrade your A3000 or Archimedes.

Interface card from £149.00+VAT

Hard Drive Kits from £375.00+VAT

PRESENTER II

RISC OS based graphics package (graphics, charts etc . . .) for education and business.

£39.95+VAT

PRESENTER STORY

A series based presentation software that allows you to make slides and o.h.p.'s obsolete.

£199.95+VAT

Coming Soon . . !

COLOUR CONVERTER

Software and hardware card for capturing full colour images using the monochrome Watford Digitiser and colour video equipment.

£169.95+VAT

COLOUR DIGITISER

Single card real-time full colour digitiser for Archimedes

Access

BARCLAYCARD VISA

Education discounts and site licences for software are available.

L I N G E N U I T Y

P R O F E S S I O N A L

Wood Farm, Linstead Magna, Halesworth, Suffolk IP19 0DU

SALES HOTLINE **098 685 477**

Please send me more information about: SCSI ☐ Presenter II ☐ Colour Converter ☐ Presenter Story ☐ Colour Digitiser ☐

Name _____ Address _____

_____ Tel No. _____

LINGENUITY, Wood Farm, Linstead Magna, Halesworth, Suffolk IP19 0DU

Tel: 098 685 477

RU

A DIVISION OF LINDIS INTERNATIONAL LTD

Assembler Workshop

Module-Based Desktop Applications

David Spencer continues his look at writing applications in ARM assembler.

In last month's *Assembler Workshop* we looked at writing general applications in ARM assembler, and also considered the special features of writing applications in the form of relocatable modules. In this article we will consider one specialised area - that of writing multi-tasking Desktop applications as modules.

WHY USE A MODULE?

It is worth noting why one would want to implement applications as modules. There are two main advantages. Firstly, a module remains resident until removed by the user (or the machine is hard-reset) and this means that you can implement persistent applications which can be restarted after they have been quit without having to reload them.

The second advantage is that modules can be loaded automatically from hardware expansion cards whenever the computer is reset. This means that the controlling application for a particular piece of hardware can be loaded directly without needing a copy on disc.

THE DESIGN CRITERIA

Fundamentally, a module-based Desktop application is little more than a normal multi-tasking application written in ARM code and implemented as a module as described last month. However, there are a few desirable features that can be added. Firstly, the application should be capable of starting up automatically whenever the Desktop is entered. Secondly, if the module requires workspace then it should only claim this while it is actually running as an application, and should free it as soon as it is terminated. The built-in Desktop applications, namely the Task Manager, Palette Utility and the Filers, all obey these characteristics.

To understand how to design applications to meet these criteria we need to look very briefly at how the Desktop module works. Contrary to what you might expect, the Desktop module does not in itself implement the Desktop display (this is a function of the Window Manager), but rather provides a springboard for starting up module applications.

Whenever the Desktop module is entered, either as the default language after a reset, or by using *Desktop, it starts itself up as a Wimp application. This is done so that it can subsequently call SWI "Wimp_StartTask" to start up further applications. The Desktop then issues a service call &49 (Service_StartWimp) to other modules. If a module contains a Desktop application, and that application isn't already running, then it should claim this service call (by setting register R1 to 0) and return with register R0 pointing to a star command that can be used to start the application. The Desktop module then passes this command to SWI "Wimp_StartTask" to actually start the application. The application module should also claim any workspace it needs at this point. We shall return to this shortly.

Assuming that a module claims the *StartWimp* service call, the Desktop module re-issues it to allow the next application to be started. This process continues until the service call is not claimed, at which point the Desktop module starts up any tasks named on the command line or in a start-up file. Finally, the Desktop closes itself down as a Wimp application. Provided that at least one application has been started, this will be enough to keep the Wimp running and provide the Desktop display. Otherwise, the machine returns to a star prompt by calling SWI "OS_Exit". To illustrate this try *RMKILLing the Task Manager, Palette Utility and Filer, and start up the Desktop.

Special attention is needed to handle errors that occur while an application is trying to start. The problem is that if an application fails to start correctly, it will be called again when the Desktop next issues the start-up service call, and the computer hangs in a loop of repeated errors. To get round this, any application that gets an error during the start-up procedure should

set a flag to indicate this, and ignore any further *StartWimp* service calls. After all the module applications have been started, the Desktop module issues another service call, &4A (Service_StartedWimp) which the individual applications should use to reset their error flags. This is so that the applications are free to try again next time the Desktop is started. Similarly, the flag must be cleared when the service call Service_Reset is received, in case the user presses Reset during the start-up process.

The error flag can conveniently be stored in the module's private word which is normally used to point to the module's workspace. If the application is currently inactive, it will not have any workspace, and this word will be set to zero. If the module has successfully claimed the necessary workspace then the private word is set to its address, while if an error occurs the word can be set to -1 to indicate this. This can be seen in the example program given later.

The next stage of the process is actually starting the application. We have already seen that this is done by a star command passed to SWI "Wimp_StartTask" via the Desktop module. This command is conventionally of the form *Desktop_Appname, for example *Desktop_Palette. All this star command needs to do is to call SWI "OS_Module" with a reason code of two to call the module's start entry, as explained in last month's article.

Another consideration is that if the user enters the *Desktop_Appname directly, then a suitable error message must be given. This is because in such cases the module's workspace will not have been claimed, and hence the application cannot be started properly. This is easily done by checking that the workspace has been claimed before calling SWI "OS_Module" to enter the application. The conventional form of error message is something along the lines of:

```
"Use *Desktop to start <appname>"
```

It is also necessary to perform a similar check when the module's start entry point is called. This is because the user may try to call the start entry directly, or do it inadvertently by *RUNing the file containing the module.

OTHER START-UP METHODS

So far we have only considered the automatic start-up of applications. However, it is often useful to have another star command that can be used to start up the application directly, provided that the Desktop is active. Not only does this allow the user to re-start the application without leaving and re-entering the Desktop, but it is also essential if the application has to be started when the user double clicks on a file of a particular filetype.

To do this, the module must provide a star command that claims the necessary workspace and then calls SWI "OS_Module" to start the application. As before, though, there are a couple of checks that need to be made. To start with, if the module already has some workspace, then the application must currently be running, and an error should be given. Secondly, a check needs to be made to ensure that we are currently in the Desktop environment. This can be done using the call SWI "Wimp_ReadSysInfo". If this call is made with register R0=0, then on exit R0 contains the number of currently active tasks. Any non-zero value indicates that we are in the Desktop environment.

CLOSING DOWN AN APPLICATION

Whenever a module-based application is terminated, the module's workspace must be released. Conversely, if the user *RMKILLs an application module that is currently running, then it must first be shut down.

Taking these in reverse order, the finalisation entry must check if the application is currently running. If so, it must call SWI " Wimp_CloseDown" to kill the application and then free the workspace.

To handle the need to free the workspace when the application is terminated, the Wimp provides another service call - Service_WimpCloseDown (&53). This is invoked whenever an application is being terminated, with register R2 containing the task handle. The module should check this handle, and if it is its own it should free the workspace. This method is preferable to releasing the workspace whenever SWI "Wimp_CloseDown" is called, as there are some cases when the

Wimp can perform the close down automatically - for example if an untrapped error occurs.

CLAIMING MEMORY

Mention was made in last month's article about the choice between using RMA memory as workspace, and using the application workspace. Normally, a new application is given the amount of memory specified in the 'Next' slot of the Task Manager. However, in the case of a module application, the Wimp assumes that the module doesn't need the memory and returns it to the free pool. Before doing this, service call &11 (Service_Memory) is issued, with R0 set to the *currently active object* pointer (CAO). If an application wishes to hold on to the memory, and the CAO points to the start of the module, then it should claim this call. Of course, any application can change its share of the application workspace using SWI "Wimp_SlotSize".

APPLICATION SPRITES AND TEMPLATES

There is a potential problem when a module-based application needs to merge sprites into the Wimp's sprite spool. The trouble is that both *IconSprites, and its low-level SWI equivalent, can only load sprites directly from a file. In the case of an application module loaded from disc this is not a serious problem, as the sprite file can be loaded at the same time. However, this avenue is not open to a module that is loaded directly from an expansion card's ROM. In this situation, the only solution currently is to implement a filing system (albeit a minimal one) that can 'load' files directly from memory. Thankfully, Acorn acknowledge this problem and have developed a new version of the *DeskFS* filing system which allows individual modules to add their own files to it. However, this will not be available until the next release of a new ROM set.

A similar problem arises if the application module wishes to use template files. In this case you must either implement a filing system or write a set of routines to read memory-based template files directly. This latter approach is probably the more elegant and simple.

A COMPLETE EXAMPLE

To round off we present a simple Desktop application module. All the application does is to put an icon on the icon bar, and generate an error whenever it is clicked on.

Enter the listing and save it before running. When run, the assembled module is saved as 'ErrorApp'. Load the module using *RMLOAD ErrorApp and then enter the Desktop. Clicking on the error icon brings up an error box. Selecting 'OK' clears the error box, while ' Cancel' quits the application.

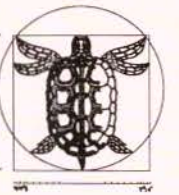
You should be able to follow through the various stages of the start-up procedure. This month's magazine disc contains an extended example with a fully commented version of the source code. This extended version illustrates the use of a star command to start the application directly, and shows how command line parameters can be picked up - essential when running a data file.

Next month's *Assembler Workshop* moves onto a new topic and looks at memory heaps and RISC OS's built-in *Heap Manager*.

```
 10 REM             > ErrorMod
 20 REM Program     Example application
 30 REM Version     A 1.0
 40 REM Author      David Spencer
 50 REM RISC User   September 1990
 60 REM Program     Subject to Copyright
 70 :
 80 DIM code 1000
 90 FOR pass=4 TO 7 STEP 3
100 O%=code:P%=0:L%=O%+1000
110 [OPT pass+8
120 EQUD start
130 EQUD init
140 EQUD final
150 EQUD service
160 EQUD title
170 EQUD help
180 EQUD commtab
190 :
200 .title
210 EQUS "ErrorApp":EQUB 0
220 :
230 .help
240 EQUS "Error App":EQUB 9
250 EQUS "1.00 (23 Jun 1990)"
```

LONGMAN LOGOTRON

setting standards, meeting targets.



WE ARE LOOKING FOR AUTHORS

Can You Program the ARM in Assembler ? Can You Write RISC OS applications in C, Pascal or Compiled Basic ? Do you have a background in or a feel for the very best practice in the use of Computers in Schools ? Do you have an eye for detail and demand the highest standards of visual presentation in your work ? Have you experience of working with other software companies and feel you are not getting a top return for your efforts ?

WE OFFER YOU THE BEST RATES OF ROYALTY IN THE BUSINESS

We offer you the most professional marketing backup for your product.

We publish your product with the highest quality documentation.

We offer you privileged access to the highest quality, highest level of development information available in Cambridge, both formal and informal.

IN SHORT, WE OFFER YOU ALL THE ADVANTAGES OF WORKING WITH THE BIGGEST EDUCATIONAL SOFTWARE PUBLISHER IN THE UK

Over the next couple of months, Longman Logotron are actively seeking two or three top quality, generic, cross curricular RISC OS applications to add to our select list of Archimedes Products for 1990-91.

If you think you could be one of the two or three authors we are looking for, contact Julian Pixton - in complete confidence, on Cambridge (0223) 323656 now !

LONGMAN LOGOTRON - THE SOFTWARE MARKETING PROFESSIONALS

Publishers of :
Archimedes Logo, Archimedes Pendown and Archimedes Numerator.

LONGMAN LOGOTRON, DALES BREWERY, GWYDIR STREET, CAMBRIDGE, CB1 2LJ
TELEPHONE: (0223) 323656 FACSIMILE: (0223) 460208

```
260 EQUB 0:ALIGN
270 :
280 .commtab
290 EQUS "Desktop_Error":EQUB 0
300 ALIGN:EQUD errorcomm
310 EQUD 0:EQUD 0:EQUD 0:EQUD 0
320 :
330 .init MOV R0,#0:STR R0,[R12]
340 MOVS PC,R14
350 :
360 .service
370 STMFD R13!,{R2-R3,R14}
380 TEQ R1,#&27:BEQ ser_reset
390 TEQ R1,#&49:BEQ ser_start
400 TEQ R1,#&4A:BEQ ser_startover
410 TEQ R1,#&53:BEQ ser_closedown
420 LDMFD R13!,{R2-R3,PC}^
430 :
440 .ser_start
450 LDR R2,[R12]:TEQ R2,#0
460 LDMNEFD R13!,{R2-R3,PC}^
470 MOV R0,#6:MOV R3,#256
480 SWI "XOS_Module":MVNVS R2,#0
490 STR R2,[R12]:STRVC R12,[R2,#4]
500 MOVVC R0,#0:STRVC R0,[R2]
510 ADRVC R0,commtab:MOV R1,#0
520 LDMFD R13!,{R2-R3,PC}^
530 :
540 .ser_startover LDR R14,[R12]
550 CMN R14,#1:MOVEQ R14,#0
560 STREQ R14,[R12]
570 LDMFD R13!,{R2-R3,PC}^
580 :
590 .ser_closedown MOV R3,R2
600 LDR R2,[R12]:CMP R2,#0
610 LDMLEFD R13!,{R2-R3,PC}^
620 LDR R2,[R2]:CMP R2,R3
630 LDMNEFD R13!,{R2-R3,PC}^
640 :
650 .ser_reset
660 LDR R2,[R12]:CMP R2,#0
670 MOVLT R2,#0:STRLT R2,[R12]
680 MOVGT R0,#0:STRGT R0,[R12]
690 MOVGT R0,#7:SWIGT "XOS_Module"
700 LDMFD R13!,{R2-R3,PC}^
710 :
720 .final STMFD R13!,{R14}
730 LDR R12,[R12]:BL shutdown
740 LDMFD R13!,{PC}
750 :
760 .errorcomm
770 LDR R12,[R12]:CMP R12,#0
780 ADRLE R0,badstart
790 ORRLES PC,R14,#1<<28
800 ADR R1,title
810 MOV R2,R0:MOV R0,#2
820 SWI "XOS_Module":MOV PC,R14
830 :
840 .task EQUS "TASK"
850 .appname EQUS "Example application
":EQUB 0
860 .message EQUD 0:EQUS "Select butto
n pressed":EQUB 0:ALIGN
870 :
880 .badstart
890 EQUD 0:EQUS "Use *Desktop to start
the error application":EQUB 0:ALIGN
900 :
910 .start LDR R12,[R12]
920 CMP R12,#0:ADRLE R0,badstart
930 SWILE "OS_GenerateError"
940 ADD R13,R12,#256
950 MOV R0,#200:LDR R1,task
960 ADR R2,appname
970 SWI "Wimp_Initialise"
980 STR R1,[R12]:ADR R1,iconblock
990 SWI "Wimp_CreateIcon"
1000 .pollloop MOV R0,#0
1010 ADD R1,R12,#&80:SWI "Wimp_Poll"
1020 TEQ R0,#6:BEQ click
1030 TEQ R0,#17:TEQNE R0,#18
1040 BEQ receive:B pollloop
1050 :
1060 .receive LDR R0,[R1,#16]
1070 TEQ R0,#0:BNE pollloop
1080 .exit BL shutdown:SWI "OS_Exit"
1090 :
1100 .iconblock
1110 EQUD -1:EQUD 0:EQUD 0
1120 EQUD 84:EQUD 80:EQUD &300A
1130 EQUS "error":EQUB 0
1140 :
1150 .click LDR R0,[R1,#8]
1160 TST R0,#4:BEQ pollloop
1170 ADR R0,message:ADR R2,appname
1180 MOV R1,#&13:SWI "Wimp_ReportError"
1190 CMP R1,#2:BNE pollloop:B exit
1200 :
1210 .shutdown
1220 CMP R12,#0:MOVLE PC,R14
1230 STMFD R13!,{R14}:LDR R0,[R12]
1240 TEQ R0,#0:LDRNE R1,task
1250 SWINE "XWimp_CloseDown"
1260 LDR R0,[R12,#4]:MOV R1,#0
1270 STR R1,[R0]:MOV R2,R12
1280 MOV R0,#7:SWI "XOS_Module"
1290 LDMFD R13!,{PC}
1300 ]NEXT
1310 SYS "OS_File",10,"ErrorApp",&FFA,,
code,O%
```

RU

ARXE SYSTEMS LTD.

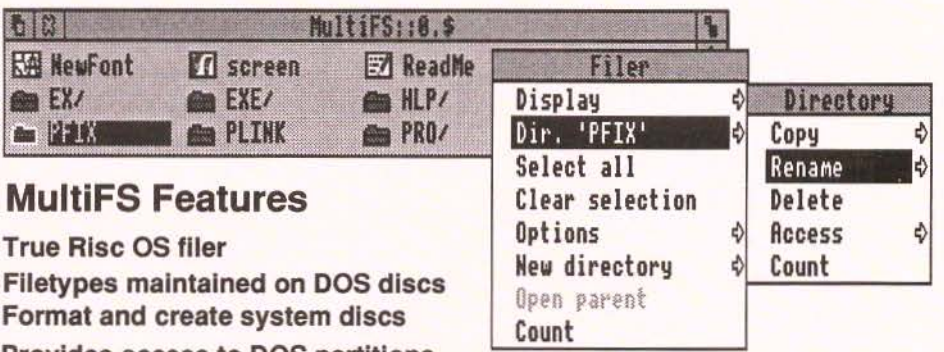
Arxe Systems Ltd
PO Box 898 (Ref RU)
Forest Gate, London, E7 9RG
Tel : 081 534 1198 (eve)

MULTIFS

MultiFS provides the Archimedes with multiple filing system support. This new filer allows the user to read and write to non standard Archimedes discs from within the desktop enviroment. Current formats supported :

- ☆ **MS-DOS**
- ☆ **Atari DOS**
- ☆ **BBC DFS**

This filer allows access to any hard disc partitions for the PC Emulator, and allows the user to treat PC discs in exactly the same manner as ADFS discs.

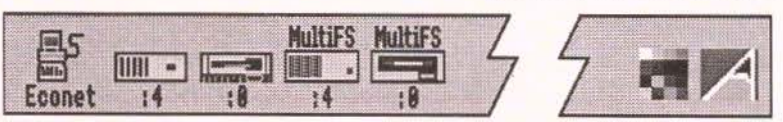


MultiFS Features

True Risc OS filer
Filetypes maintained on DOS discs
Format and create system discs
Provides access to DOS partitions
Supports disc names for DOS

Site licences available, for furthur details please write to the above address.

MultiFS is available now, priced at £36, including VAT and postage. Please make all cheques payable to Arxe Systems Ltd. Sorry but no credit cards. For further details please write to the above address.



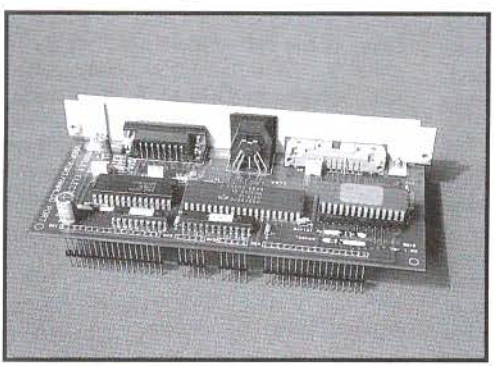
Morley Analogue/User Port Expansion Card

Reviewed by Alan Wrigley

The expansion card from Morley Electronics which is reviewed here provides the A3000 with a BBC-type Analogue Port and User Port, and also has an I2C connector thrown in for good measure.

CONSTRUCTION

The board appears to be well constructed, and contains seven chips, including a 6522 VIA and an A-D converter, as well as a ROM containing the controlling software. The 44 pins which plug into the connectors on the main A3000 board are robust. However, the flanges which mate to the rear casing of the A3000 when the board is fitted have been painted, whereas they should be left as bare metal to aid earthing. The rear plate of the board contains a 20-way IDC connector for the user port and a 15-way D-type connector for the analogue port, exactly as on the BBC micro. Between the two is the 5-pin DIN socket which provides the IIC connection.



The software is claimed to be fully compatible with the BBC micro, and recognises all the appropriate OS_Byte calls and also the Basic ADVAL command.

USING THE BOARD

To test fully a product such as this requires either commercial BBC software which will run on the A3000, or software which has been designed specifically to make use of the board's facilities. It is no use, for example, expecting to use BBC joysticks via the analogue port to control a game written for the Arc, because the game will be totally unaware of the existence of the port or of the commands to access it. Nevertheless, by writing a short program using the ADVAL command to read a pair of Voltmace Delta joysticks, I was able to ascertain that the command worked as it should.

There was a similar problem in testing the user port thoroughly, since most commercial BBC software writes directly to the port instead of using the *FX calls provided by Acorn. However, by improvising in the same way as with the analogue port, this time using the OS_Byte calls 150 and 151, I was able to read from and write to the user port, and any legally written software using these calls should work without problems.

APPLICATIONS

Clearly this board is aimed at educational and other users who have some experience of the expansion capabilities of the BBC micro and require the same facilities from the A3000. As mentioned above, using it with commercial BBC software will be rather hit-and-miss. However, legally-written software which has been designed for the Arc (e.g. for Acorn's own I/O podule), should run without problems, and for classroom projects involving control applications, or other projects requiring an interface to the outside world, the Morley board should prove very useful. However, the IIC connector may prove to be a white elephant. Unless you are absolutely certain you know what you are doing, I would not recommend using this, since the lines connect directly to the computer and there is a possibility that you may damage the A3000's IOC chip.

CONCLUSIONS

If you wish to use your A3000 for external interfacing, and if you are satisfied that you have the right software to do so, then this board should be a worthwhile addition to your computer.

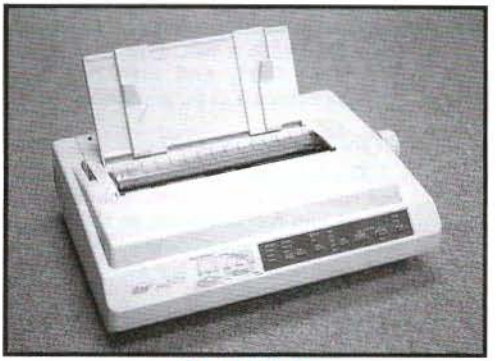
Product	*A3000 Analogue/User Port*
Supplier	*Morley Electronics Ltd* *Morley House, West Chirton,* *North Shields NE29 7TY.* *Tel. 091-257 6355*
Price	*£79.35 inc. VAT*

RU

Star XB24 Printer

Reviewed by Alan Wrigley

The Star XB24 is one of the new breed of printers which offer a range of facilities and a standard of printout that was unheard of a few years ago. It is a 24-pin machine which comes in two versions: the XB24-10 has a 10-inch carriage (80-column) while the XB24-15 is a wide-carriage version (15-inch). Functionally however, the two versions are identical and so this review will not differentiate between them.



The XB24-10

PRINTER DESCRIPTION

The XB24 comes with a paper guide, a ribbon cartridge and a manual. An automatic sheet feeder and a colour upgrade kit are available as optional extras. The printer is attractively designed, though a little bulkier than some others on the market. It is constructed from lightweight but durable plastic, and looks to be fairly robust, though no printer will stand up to repeated ill-treatment.

The printer has both tractor-feed and cut sheet paper handling built in. These have been ingeniously arranged so that it is not necessary to remove the fanfold paper in order to insert a single sheet. Instead, a method known as *paper parking* is employed. The fanfold paper is "parked" safely out of the way while the cut sheet is printed, then can be moved back into the paper path afterwards. Loading of single sheets is delightfully simple - the paper is slotted into the guide on top of the printer, and with one press of a button it is fed to the correct place to start printing. What is more, there is a default setting which allows you to choose where this position will be - either at the top of the paper or up to 6 lines down.

The front panel is neatly designed, and as well as having the usual on-line and feed buttons, allows you to set the pitch and print quality, and to select one of a number of built-in fonts.

As usual, there are a few DIP switches in the machine which may be altered, but many of the defaults are set from the front panel by the following method, known as the memory switch mode. Switching on the machine with certain buttons held down will cause the XB24 to print out a menu. You can use buttons to move the print head below the option required, whereupon a sub-menu will be printed, and so on. Once you get the hang of it, it is very simple to select the options required, and once selected they remain the defaults in the future.

THE XB24 IN USE

The printer has two emulation modes, Epson and IBM. The manual contains comprehensive descriptions of all the control codes, although there is no quick-reference appendix - you have to plough through the book to find the one you want. There should be no difficulty using the XB24 with any software which claims Epson compatibility, although some of the more advanced features of the printer, such as outline and shadow printing and the various fonts, may not be easily

accessible unless the software is customisable. Used in bit-image mode via a RISC OS printer driver, the quality is excellent and the speed very acceptable for a dot matrix printer.

There are two features which in my opinion set the XB24 aside from its competitors. However, from the point of view of an Archimedes owner, both of these are irrelevant if you are planning to use the printer mainly in bit-image mode with a RISC OS printer driver (see this month's *Into the Arc*). Firstly, it has an excellent range of fonts built in, all of which can be used in 10, 12, 15, 17 and 20 cpi pitches, as well as proportional spacing; and all the fonts can be printed in italic, bold, outline, shadow, superscript and so on. Samples of all these fonts are shown in Figure 1. There is even a font which prints bar codes.

This is proportionally spaced Times Roman
This is proportionally spaced TW-Light
This is proportionally spaced Courier
This is proportionally spaced Prestige
This is proportionally spaced Script
This is OCR-A, and this is OCR-B
This is proportionally spaced Letter-Gothic
This is proportionally spaced Blippo
THIS IS PROPORTIONALLY SPACED ORATOR
This is proportionally spaced Helvetica
This is proportionally spaced Optimo
This is proportionally spaced Cinema
This is proportionally spaced Greek
Blippo font with outline printing
ORATOR FONT WITH SHADOW PRINTING
Times Roman font in proportionally spaced superscript
Enlarged double-height bold Cinema

The XB24's built-in fonts

Secondly, in addition to the normal draft and letter quality print, the XB24 has super letter quality (SLQ). This is achieved by making two passes of the print head, which effectively simulates a 48-pin printer. The resulting quality is truly excellent, as you might expect.

Another extremely worthwhile feature is the large (27K) buffer built into the machine. This makes a tremendous difference when printing listings or long text documents (an average A4 page will contain about 3K of data), and as a result the computer will be free to get on with the next task much more quickly. For bit-image printing, however, the larger the buffer the better; the XB24 scores here too, being expandable to 187K, though even this will seem small if you are printing DTP files of 1 Mbyte or more.

PERFORMANCE

The XB24 has quite an impressive turn of speed for a printer in its price bracket. The maximum speed for draft output is claimed to be 240 cps, and for letter quality, 80 cps. To get significantly more speed than this, you will have to pay a lot more. Using SLQ will obviously halve the latter figure, but this is compensated for by the extra quality, which is not normally available from a 24-pin printer. When printing a simple DTP document in bit-image mode the XB24 is faster than many printers in NLQ mode, and thus makes an excellent choice of printer if you cannot afford a laser. Even a complex A4 page created with Impression was printed at a resolution of 360x360 dpi in 8 minutes, compared with 14 minutes at 240x216 on an Epson LX80, and 6.5 minutes on a LaserJet compatible at 300x300.

The printer is not unduly noisy in use. Some 24-pin machines when printing letter quality emit a high-pitched screech which seems to come perilously close to the limits of comfort. However, my ears did not find the XB24 too uncomfortable, though I doubt if I would want to hear it all day. Some fonts are noisier than others, though. The fan operates the whole time, and this might contribute to the noise level in an otherwise quiet environment.

COLOUR

Upgrading the printer for multi-colour printing is simplicity itself. The colour kit consists of a small module which just drops into a slot already waiting for it in the ribbon carriage, and a four-colour ribbon which replaces the standard black one. The XB24 then performs like any other Epson-compatible colour printer. All the facilities, including SLQ, are available in colour, and the good news for Arc owners is that printer drivers are beginning to appear which will cater for 24-pin colour printing.

CONCLUSIONS

There are many things to consider before buying a printer (see *Into the Arc*, Volume 3 Issue 8). Will it work correctly with *all* your software? Is the noise acceptable, bearing in mind that some people may find certain frequencies more objectionable than others? Do you actually need a 24-pin printer, or will you only be printing program listings? Would you be better off with a cheap laser printer? Provided you are satisfied that the XB24 fits the bill, then I doubt if you will find better value for money anywhere. For its price it is simply outstanding.

The XB24-10, XB24-15 and colour upgrade kits are all available from BEEBUG. See our retail catalogue for details.

Product	*XB24-10 and XB24-15 printers*
Supplier	*Star Micronics UK Ltd,* *Star House,* *Peregrine Business Park,* *Goss Road,* *High Wycombe, Bucks.* *Tel: (0494) 471111*
Prices	*XB24-10 £469.95 inc.VAT* *XB24-15 £659.95 inc.VAT* *Colour kit £31.95 inc.VAT*

These are the current BEEBUG members prices

RU

Have You Got PipeDream 3?

Yes! Then you need PipeLine — The Magazine on a Disc

PipeLine is a quarterly magazine for users of PipeDream 3

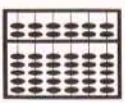
The July 1990 Issue is based on the Monthly Series in Archive

Hints & Tips — Worked Examples — Printing — Databases

No! Then you need Colton's Demonstration Disc (£2.00 extra)

With it you too can read PipeLine — The Magazine on a Disc

PipeLine — Price £5.00 inclusive of UK Postage



ABACUS TRAINING

29 Okus Grove, Upper Stratton, Swindon, Wiltshire, SN2 6QA.

Telephone: 0793 723347

Bulletin Boards

Alan Wrigley looks at some boards which feature the Archimedes.

In the last issue of RISC User we looked at SID, Acorn's Support Information Database. There are a number of other bulletin boards which either cater specifically for Arc owners, or which have Arc sections among others. A list of those which currently specialise in the Archimedes is given at the end of this article. Bulletin boards come and go, and the best way to make yourself aware of what is on offer is to log on to as many as you can find. You will usually find information about, or references to, other similar boards.

All the boards featured have thriving message areas. By posting messages, users of the board can generate a lively discussion on a current topic. The subjects covered vary from board to board, but may include general topics, Arc-specific topics, music, comms, programming, DTP, and even jokes. Many of those who use these boards are knowledgeable about one or more aspects of Archimedes computing, or computing in general, and they are only too happy to share their knowledge with others.

SOFTWARE

Another feature which is virtually universal among bulletin boards is downloadable software. You can nearly always find graphics and sound demos, as well as useful text files full of information. If you are lucky, there will also be a wide range of useful programs, including many Desktop utilities, disc utilities and so on.

INTERACTION

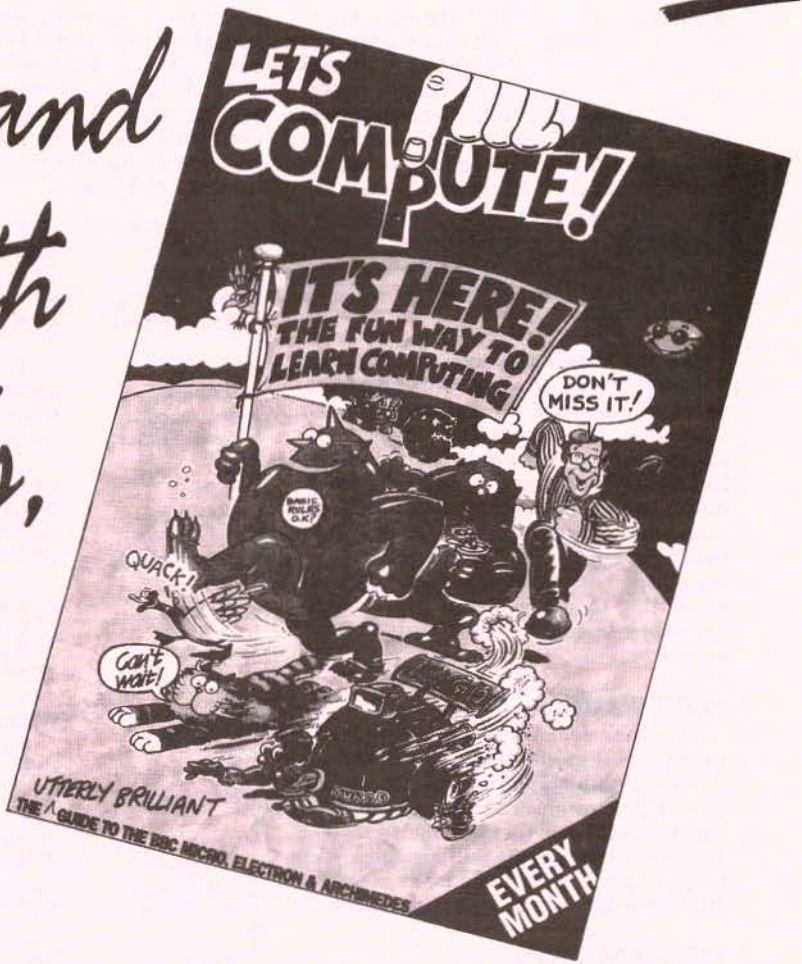
The main feature of bulletin boards is interaction between the users. It is all too easy to think of boards as providing a commercial service, whereas in fact they are normally run by enthusiasts who are giving up their free time in order to promote social contact between like-minded people. If you spent hours of your time setting up an interactive system, only to find that the users simply wanted to grab everything on offer without contributing anything, you would justifiably be annoyed and might well conclude it was a waste of time. So if you log on to a bulletin board, please contribute something, even if it is only a message saying who you are and what you think of the board.

Board:	Arcade
Location:	London
Tel. number:	081-654 2212
Access times:	24 hours
Board:	ArcBase
Location:	Sweden
Tel. number:	01046 (8) 965195
Access times:	24 hours
Board:	Archive
Location:	Norwich
Tel. number:	(0603) 745932
Access times:	24 hours
Board:	Arcport
Location:	Aldershot
Tel. number:	(0252) 737065
Access times:	18.00-8.00, 24 hrs w/e
Board:	Arcturus
Location:	Runcorn
Tel. number:	(0928) 714460
Access times:	24 hours
Board	Noah
Location:	Bristol
Tel. number:	0272 572322
Access times:	24 hours
Board:	The World of Cryton
Location:	Wells
Tel. number:	0749 670030
Access times:	24 hours

All the boards listed here can be accessed on a scrolling terminal at 300 baud (V21) and 1200 baud (V22), and all except Arcport at 2400 baud (V22bis). All the boards use 8 bits, no parity, 1 stop bit. RU

Computing should be fun

...and with this, it is!



Let's Compute! has been hailed as the world's first computer comic. But it's much more – a full-colour, brilliantly illustrated and cleverly written way of tapping into the interest young people have in the world of computing. It's now at your newsagents, but you can get the next 12 issues by sending £12 to: *Let's Compute!* Database Direct, FREEPOST, Ellesmere Port, South Wirral L653EB.

It's on sale NOW!

Mastering the Wimp
Part 11: Menus concluded

by Lee Calcraft

In concluding this section on Wimp menus we will cover three new features of the menu system:

Handling the Adjust button
Creating sub-menus
Implementing menu dialogue boxes

Firstly, the Adjust button.

HANDLING ADJUST

It is a RISC OS convention that clicking with the Adjust button on a menu entry should have the same effect as Select, except that the menu tree should be kept open. This is obviously a useful convention, since one often needs to make a number of selections from a menu, and it would be very tiresome if the whole menu tree always disappeared with each selection.

To make a menu system perform in this way is easy. All you need to do is to use SYS "Wimp_GetPointerInfo" (SWI &400CF, PRM page 1214) each time a menu selection is reported to the task via Wimp Poll reason code 9. From this we can tell if the user made his menu selection with Select or Adjust. If he used Adjust, then we simply call SYS "Wimp_CreateMenu" before returning to Wimp Poll. This causes the Wimp to reopen the menu tree at the same place, and in such a way that it appears never to have been closed. Of course, if the user's selection necessitates a change in the menu data - such as placing a tick against an item, the data must be updated before calling Wimp_CreateMenu.

To handle the Adjust button in our test program (and to make way for creating sub-menus), you will need to make the following changes:

1. Alter the initial line of DEFPROCdrawmenu (approx line 1630) to read:

```
DEFPROCdrawmenu(menu%,menu$)
```

2. After the line which reads:

```
ptr%!-24=ptr%!-24 OR &80
```

at around line 1810, insert the following three lines:

```
ENDPROC
:
DEFPROCshowmenu(menu%,x%,y%,oniconbar
%,entries%)
```

This provides us with a new procedure (PROCshowmenu), which permits us to separate the setting up (or creation) of menus, and their display.

3. Just after the definition of the icon i4handle% at around line 300 insert the line:

```
PROCdrawmenu(menu%,"Menu  tester,Info
,Options,Quit")
```

This creates an icon bar menu early in the program. Now replace the open menu sequence in PROCbuttons under the line:

```
IF block%!8 AND 2 THEN
```

by:

```
PROCshowmenu(menu%,x%,y%,TRUE,3)
```

If you run the program at this point, it should work as before. But now we can implement the Adjust button feature by adding the following lines just before the ENDPROC of PROCmenuselect (at around line 1920).

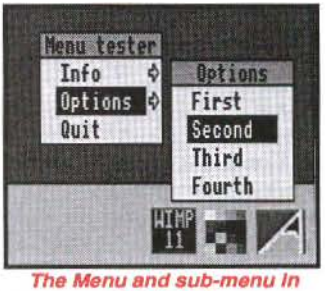
```
IF NOT quit% THEN
  SYS  "Wimp_GetPointerInfo",,block%
  IF  block%!8=1  THEN  PROCshowmenu(
menu%,x%,y%,TRUE,3)
ENDIF
```

These are the lines which do the work. block%!8 contains the button pressed (4 for Select or 1 for Adjust). If the value is 1, then PROCshowmenu is called to keep the menu tree open. As yet we have no real tree to speak of, but we can begin to grow one by implementing sub-menus.

SUB-MENUS

As you will be aware, any Wimp menu can have sub-menus, indicated by an

arrow to the right of a menu entry, and these may themselves have sub-menus and so on. The repertoire of Wimp SYS calls contains a call Wimp_CreateSubMenu, but this is normally only used if the programmer requires his task to intervene in some way in the drawing of menus. Normally, a menu system with its sub-menus is created by placing a suitable data block in memory for each menu and sub-menu, and then calling Wimp_CreateMenu in response to the user clicking Menu at the appropriate place (e.g. over the task's icon on the icon bar). Providing we have inserted the address of each sub-menu's data block into the menu flags of the associated entry in the parent menu or sub-menu, the Wimp will handle the whole job for us.



The Menu and sub-menu in operation

To see how this works we will implement a single sub-menu off the middle item in the main menu of our test program. To do this you will need to have made the alterations suggested above, one of the effects of which will be to rename the middle item of the icon bar menu "Options".

Implementing the sub-menu requires very little in the way of additional code. Add to the end of line 90 a statement to reserve memory for the sub-menu at menu2%, as follows:

```
DIM block% &200,text1% &20,menu% &100
,menu2% &100
```

Immediately below the line beginning PROCdrawmenu(menu%,Menu tester... at around line 300, insert the following lines:

```
PROCdrawmenu(menu2%,"Options,First,Se
cond,Third,Fourth")
menu%!(32+24)=menu2%
```

The first is all that is needed to set up the entire sub-menu, while the second inserts the address of this new menu at bytes 4-7 of the menu flags of the second item in the first menu. To insert it at the third item instead we would use:

```
menu%!(32+2*24)=menu2%
```

and so on.

If you now run the program, you should see that the middle item on the menu "Options" has a right-pointing arrow to the right of it, and that if you move the pointer across this, the new sub-menu opens up. This is fully operational, and will conform in its behaviour to Acorn's Wimp guidelines.

All we need to do now is to alter the procedure PROCmenuselect to find out which entries in the sub-menu have been selected. In the test program last month, a line of code was included in PROCmenuselect to display the number of the menu entry selected by the user. This used VDU4 to print it directly on the Desktop background. The information was derived from !block% which contains the number of the top level menu entry selected by the user. If no sub-menus are open at the time of selection, the following word (at block%!4) contains -1. But if any second level sub-menu is open (such as the one we have just created), this location will contain the item number selected (with the top item labelled 0 as before). It is thus a simple matter to discover the options chosen by the user; and if you add menus at a greater depth, then you will also need to look in block%!8 and so on.

If you alter the first few lines of PROCmenuselect to read as follows, then the menu selections for the sub-menu will also be displayed on the background of the Desktop:

```
DEFPROCmenuselect
choice%=!block%
```

```
choice2%=block%!4
VDU4
PRINT TAB(0,0)"Menu Selection ";choic
e%;SPC2
IF choice2%>-1 THEN
  PRINT TAB(0,1)"Sub-menu choice ";ch
oice2%;SPC2
ELSE
  PRINT TAB(0,1)"No sub-menu";SPC8
ENDIF
VDU5
```

In a real application these debugging lines would be replaced by code which used choice% and choice2% to determine which of a number of activities would take place as a result of the user's selection.

MENU DIALOGUE BOXES

You will have seen that it is possible for Wimp menu entries to have right-pointing arrows associated with them which when followed with the pointer, end in a so-called dialogue box of one kind or another. The Save option from Edit is a good example of this. Another is the standard "About this program" window giving information about the author or copyright holder of the software and its version number and date. Again you can see this in action in Edit or Draw.

Menu leaves of this kind are created in the same way as normal windows by using Wimp_CreateWindow (together with Wimp_CreateIcon if the window has icons). The window handle is then inserted at bytes 4-7 of the menu flags of the associated menu entry. The Wimp then automatically handles the opening and closing of all such leaves on the menu tree. There is one proviso to this: the responses to all Wimp Poll reason codes must cater where appropriate for the new window or windows.

To see how this works in practice, we will implement an Info box similar to the "About this program" window used by Acorn and recommended as the standard to follow. Firstly we need to modify FNcreate and PROCopenwindow so that they can be used with any window, rather than just our task's main window. To do this, proceed as follows:

At around line 620, change DEFFNcreate... to:

```
DEFFNcreate(vwx%,vwy%,vww%,vwh%,extx%
,exty%,flags%,title$)
```

Alter the following 2 lines in FNcreate: block%!28=&FF000... to:

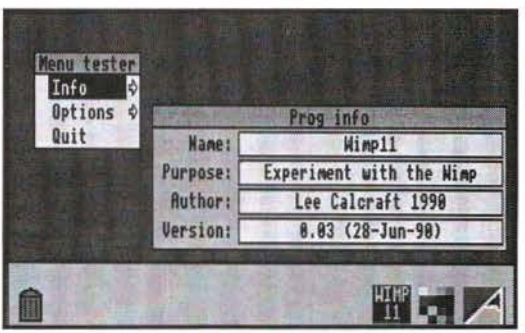
```
block%!28=flags%
```

and $(block%!72)="Test Window" to:

```
$(block%!72)=title$
```

Alter the first line of PROCopenwindow (near the end of the program) to:

```
DEFPROCopenwindow(handle%)
```



The Info box

Now alter the lines which call these procedures as follows:
whandle%=FNcreate(200... at around line 260 becomes:

```
whandle%=FNcreate(200,200,500,400,0,0
,&FF00000F,"Test Window")
```

and alter the line at around 1570 in PROCbuttons beginning ELSE IF block%!8 to:

```
ELSE IF block%!8 AND 5 THEN PROCopenw
indow(whandle%)
```

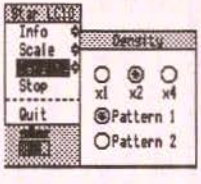
The new window is defined in the two procedures given in listing 1, and this

MIDNIGHT GRAPHICS

Multi-tasking Colour Sprite Dumps and Clip Art for the Archimedes

Dot Matrix Colour Printer Sprite Dumps

- Scaling of sprites possible either from the Sprite Dump or by using the Sprite Scaler provided on the disc which allows scaling to pixel accuracy.
- Draft, double or quad density, for optimum speed or optimum quality.
- Choice of dithering patterns for best effect. The printer driver uses a dithering pattern to produce the required colour on the printout. The first pattern produces bright sharp colours, very similar to those on screen. The second pattern produces a denser output similar to that from other drivers, which can only be recommended when you are printing solid colours and not patterns. Experimentation with the two will result in improved performance.



Multi-tasking Calculators

ArithCalc - a floating point calculator with basic mathematical functions.

ProgCalc - an integer calculator with basic arithmetic functions and a range of logical operators. Designed for use by programmers, it also functions in four bases.

SciCalc - a floating point calculator with a wide range of scientific functions. All programs incorporate visible action buttons, keyboard input, ten levels of parenthesis, memory and paste feature.

Integrex & HP Paintjet Colour Sprite Dumps

- Two dumps which have been developed to provide more accurate colour representation than using the standard RISC OS printer drivers.
- The HP Paintjet dump has an Overhead Projection mode the dump allows you to utilise this feature, enabling you to create transparencies for use in presentations.

Draw Format Clip Art

Over 480 Draw files on five 800k discs. Each disc is filled full of Clip Art enabling you to enhance your Draw, Computer Concepts Impression, Acorn DTP, Beebug's Ovation or Clares Tempest documents giving you instant access to pre-drawn and infinitely scalable high quality everyday images. Some of the images are in colour, but as these files can be edited by placing them into !Draw you can colour or alter shapes at will.

Prices - *(all ex. VAT)*

Printer dumps - Citizen Swift 9 & Swift 24, HP Paintjet, Integrex 132 & Colourcel, Juki 5520, Star LC10 & XB 24 Printer Sprite Dumps - each £26.04

Draw Format Clip Art - Set One £29.95

Render Bender Demo Discs - Set 1 or Set 2 - each £8.65

Calculators - 3 Calculators with full instructions plus file utilities £14.95

TERMS: UK residents add 15% VAT to all prices. Delivery FREE on all postal items in the UK. Export. no VAT. carriage at cost. Europe maximum £2.50 software. Access/Visa cards accepted by post/phone/in person. Official orders accepted from public sector/education/PLCs, otherwise cash with order. Tender invitations welcome. Price subject to change without notification. Goods offered subject to being unsold.

Midnight Graphics (BB), 5 Victoria Lane, Whitefield, Manchester, M25 6AL.
Telephone 061 766 8423 or Fax 061 766 8425

should be appended to the end of the program (you may wish to change the line numbering to more appropriate values). PROCcreateinfobox, the first of these, should be called early in the program by inserting the following line immediately above PROCdrawmenu(menu%... around line 300:

```
PROCcreateinfobox
```

A couple of lines below this, and after PROCdrawmenu(menu2%... you should insert the following:

```
menu%!32=ibhandle%
```

This inserts the window handle of the Info box at bytes 4-7 of the menu item "Info" on the main menu.

Finally we need to ensure that Wimp Poll reason codes 1 and 3 cope with the new window. To do this, alter the line beginning WHEN 3 to:

```
WHEN 3:SYS "Wimp_CloseWindow",,block%
```

The previous insistence on whandle%, the handle of the task's main window was both unnecessary and redundant.

We can ensure that Redraw requests are correctly handled for the two windows by altering just one line in PROCredraw. Change PROCdraw(x0%,y0%) to:

```
IF handle%=whandle% THEN PROCdraw(x0%
,y0%) ELSE PROCdraw2(x0%,y0%)
```

And there you have it. I leave you with an exhortation to experiment fully with these ideas, a warning and a question. There is just one difference between our Info box and the standard Acorn version. The title of the latter is "About this program", while the present program uses the excessively terse "Prog info". The reason for this is that non-indirected window title text is limited in length to 12 characters. To use a greater length, we need to use indirection in FNcreate (rather as we did in FNicon), and this would have necessitated yet further adjustments to the program.

The warning is about the Wimp's absence of error checking in many areas. If you do make your title longer than 12 characters without indirecting it, the Desktop will more often than not crash with an Address Exception error. Such occurrences are all too easily produced, but very hard to debug.

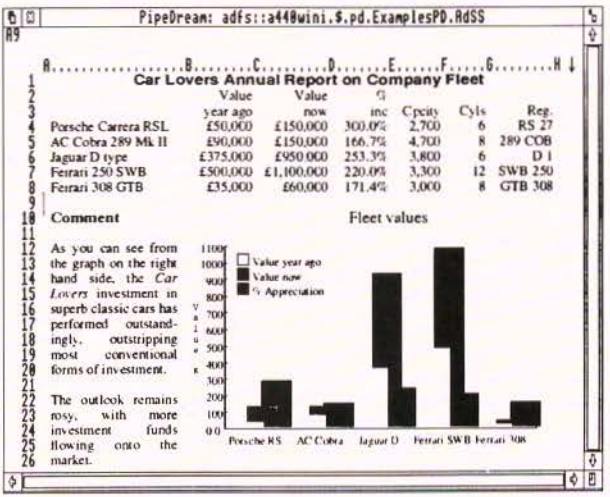
The question is: Why does clicking with the Menu button over the program name icon in the Info box generate a beep? Answer next month.

Next month we will take a look at object dragging, and the associated Wimp message system. For those keen on short-cuts, we will explore the use of FormEd very shortly.

```
2000 REM >Listing1
2010 :
2020 DEFPROCcreateinfobox
2030 DIM ibicon%(3), iconindirect% &80
2040 ibhandle%=FNcreate(0,0,636,216,0,0
,&84000002,"Prog info")
2050 FOR i%=0 TO 3
2060   READ text$
2070   $(iconindirect%+i%*&20)=text$
2080   ibicon%(i%)=FNicon(ibhandle%,154
,-(i%+1)*52,476,48,&70001BD,"",iconindir
ect%+i%*&20,-1,&20)
2090 NEXT
2100 ENDPROC
2110 DATA Wimp11,Experiment with the Wi
mp,Lee Calcraft 1990,0.03 (28-Jun-90)
2120 :
2130 DEFPROCdraw2(x0%,y0%)
2140 MOVE x0%,y0%-16
2150 PRINT"    Name:"
2160 MOVE x0%,y0%-68
2170 PRINT" Purpose:"
2180 MOVE x0%,y0%-120
2190 PRINT"  Author:"
2200 MOVE x0%,y0%-172
2210 PRINT" Version:"
2220 ENDPROC
```

RU

PIPEDREAM 3


PipeDream: adfs::a440wini.$.pd.ExamplesPD.RdSS
Car Lovers Annual Report on Company Fleet
Value year ago
Value now
% inc
Cpcity
Cyls
Reg.
Porsche Carrera RSL £50,000 £150,000 300.0% 2,700 6 RS 27
AC Cobra 289 Mk II £90,000 £150,000 166.7% 4,700 8 289 COB
Jaguar D type £375,000 £950,000 253.3% 3,800 6 D 1
Ferrari 250 SWB £500,000 £1,100,000 220.0% 3,300 12 SWB 250
Ferrari 308 GTB £35,000 £60,000 171.4% 3,000 8 GTB 308
Comment
As you can see from the graph on the right hand side, the Car Lovers investment in superb classic cars has performed outstandingly, outstripping most conventional forms of investment.
The outlook remains rosy, with more investment funds flowing onto the market.
Fleet values
Value year ago
Value now
% Appreciation
Porsche RS
AC Cobra
Jaguar D
Ferrari SWB
Ferrari 308

PipeDream 3 breaks down the barriers between word processor, spreadsheet and database. You can include numerical tables in your letters and reports, add paragraphs to your spreadsheets, and perform calculations within your databases.

Based on PipeDream 2, the best-selling integrated package for the Archimedes, PipeDream 3 has been completely re-written to take full advantage of RISC OS - if you can use RISC OS, you can use PipeDream 3. It is fully multi-tasking and multi-windowing, so you can work on many documents at once and instantly move information between them. And since PipeDream 3 can automatically load and save most popular file formats, including VIEW and First Word Plus, switching to it from other programs has never been easier.

Power, flexibility, speed, ease of use. PipeDream 3. Breaking down the barriers.

For a free brochure, see your Archimedes dealer, or phone us on 0954 211472 or return the coupon.

PipeDream 3 is for all Archimedes computers with RISC OS and 1Mbyte of RAM.

PipeDream 3 costs £147.00 +VAT.

Major features include:

- many documents loaded at once
- intuitive RISC OS user interface
- displaying and printing of pictures within text
- built-in 93,003 word spelling checker
- file compatibility with PC & Z88 PipeDream and BBC View Professional
- background recalculation
- keystroke compatibility with Z88 & PC PipeDream
- Z88 filing system
- automatic loading of VIEW, ViewSheet, Lotus, First Word Plus, Tab and CSV files
- automatic saving of VIEW, Lotus, Acorn DTP format, Tab and CSV files
- multi-field sorting
- use of all available fonts
- 62 spreadsheet functions
- external references for 3-D modelling
- macro file recorder
- slot protection

For a free brochure, complete and return this coupon
PipeDream 3 ☐ View Professional ☐
Name _____
Address _____
_____
_____
_____ Post code _____

Colton Software, Broadway House,149-151 St. Neots Road, Hardwick, Cambridge CB3 7QJ, England.
Fax: 0954 211607 Tel: 0954 211472

All trademarks acknowledged. The chart in the screen shown above was produced by sending numbers from PipeDream 3 to Lingenuity's Presenter 2 and then loading the resulting graph back into PipeDream 3.

Colton Software, Broadway House, 149-151 St. Neots Road, Hardwick, Cambridge, CB3 7QJ, England.

Fax. 0954 211607 Tel. 0954 211472

ARC/IBM Disc Management

Use this utility by Malcolm Hale to examine both ADFS and IBM formatted discs on your Archimedes, and transfer files from one to the other.

Note: Because of its length this program is included only on this month's RISC User magazine disc.

This very comprehensive utility provides a wide range of functions for examining both ADFS and IBM format discs. For the Archimedes it will handle 'D' and 'E' format discs (including disc formatting if required), and for IBM machines (and compatibles) discs pre-formatted to 720K. The program is designed to work with single drive machines, and prompts are given when it is necessary to swap discs. However, users can make a small amendment (see later) which will allow the program to handle IBM discs using an external drive (connected via a disc buffer), and this means that both 3.5" and 5.25" IBM discs may be used.

The program allows you to explore the directory structure of either format of disc, and to transfer files in either direction between ADFS discs and IBM discs. The program will run from the Desktop but is not Wimp based. It is menu driven using the cursor keys (and Return) to select most options.

The main menu screen is divided into two halves vertically, the left-hand part relating to IBM format discs, and the right-hand half relating to ADFS format discs. The cursor keys allow you to move easily between options and between the two menus.

With both disc formats you can move up and down the directory structure, create and delete directories, rename and delete files, and copy files in either direction. The current ADFS and IBM pathnames are displayed at the foot of the main menu screen. The IBM menu options also show, if required, details of the boot sector, file allocation tables and other disc sector information. The ADFS menu options also include disc formatting and other (standard) ADFS disc functions.

The main purpose of the program is to provide for file transfers between the two formats of disc, but do remember that this does not in any way ensure that information stored on one system will be readable by the other. Text is best transferred in pure ASCII format, and data files using a standard such as CSV format (comma separated values). Files in a format recognised by both systems, PostScript for example, should transfer without any problems.

The main menu display

CHANGING IBM DRIVE DESIGNATION

The drive to be used for IBM format discs is specified as the value assigned to the variable drive% in line 110 of the program (a file called !RunImage within the !ArcIBM application directory). As supplied this is set to drive 1 (for an external drive). Change this to 0 if using 3.5" IBM discs in the Arc's own drive 0, or to other values as may be appropriate for external drives.

WARNING

Mixing two quite incompatible disc formats on a single machine is always potentially hazardous. Make sure you test the system thoroughly with discs which you can afford to corrupt, before using live data. RU

IMPRESSION Junior

A completely new, reduced feature, version of the popular Impression DTP program. Designed for those who want the best in word processing and who want to take the first steps into DTP.

Special emphasis is placed on ease of use, and ease of learning. It forms the ideal introduction to DTP and can be the stepping stone from word processing to DTP. It includes all the traditional word processing functions, and more, alongside a range of powerful DTP facilities.

Enhanced word processing

Optional system font screen editing for maximum legibility • Multiple documents in memory at once • Ruler operation • True WYSIWYG • Printer drivers for all popular dot-matrix printers offering fast, character mode printing • On screen bold, italic, underline • Format as you type • Spell check with check-as-you-type, user dictionaries etc. (Based on SpellMaster) • Super fast cut/copy/paste of text and graphics - even between documents • Multi-line headers and footers • Plenty of key-short cuts for fast editing, many Inter-Word & Wordwise compatible • Loads FirstWord Plus, Inter-Word and Wordwise files. However, unlike other word processors, Impression Junior is also a very powerful DTP program offering -

Desk Top Publishing

Full use of outline fonts, scalable to any size and position on the page. • Frame based DTP operation giving simple control over the positioning of graphics or text • RISC OS printer drivers for highest possible quality output for all popular printers • On screen floating rulers for text formatting and page rulers for frame positioning • Sprite or Draw graphics at any position with instant scale and crop • Scale view of the page from 10% to 900% • A collection of frame border styles • Automatic text flow around frames • Supplied with 12 outline fonts licenced from Acorn • Very flexible print options - any scale, upright or sideways etc.

Other features

Upgradeable to Impression: Junior owners can upgrade to the full blown Impression for the difference in price, at any time • File compatible with Impression, and documents saved with Impression Junior are directly loadable into other versions • Fully RISC OS compatible with direct links to !Draw, !Paint & other applications • Ideal for 1Mbyte machine owners • No hardware protection.

The manual includes a step-by-step introduction to Impression Junior. The tutorials take you, from scratch, through the creation of simple letters, multi-page documents and typical DTP type pages. The package also includes the highly acclaimed 'DTP at a glance' book.

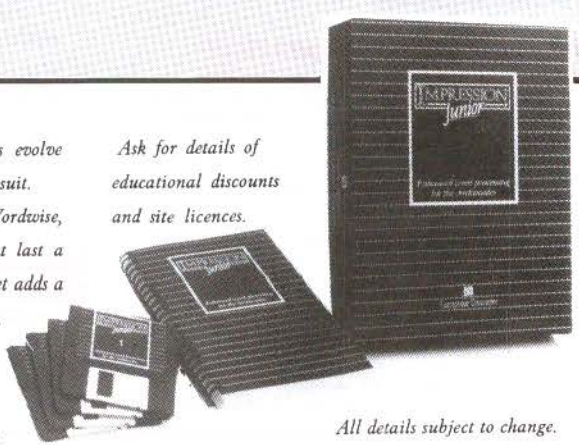
If you have been overwhelmed by the capabilities of other DTP programs, or simply don't require all the powerful features these may provide, then Impression Junior is the answer. And remember it is part of a family of products so that as your

enhanced word processing

experience grows and your requirements evolve there is always a version of Impression to suit. Created by the team that produced Wordwise, Inter-Word and Impression, Junior is at last a realistic alternative to First Word Plus, yet adds a whole new dimension of DTP possibilities.

RRP £89.95 +VAT (£103.44)

Ask for details of educational discounts and site licences.



Computer Concepts Ltd

All details subject to change.

Gaddesden Place, Hemel Hempstead, Herts. HP2 6EX. Tel 0442 63933 Fax 0442 231632

Hints & Tips. . . Hints & Tips

PRINTING WITH A CANON BJ130

D.N.Morgan

To add the Canon BJ130 to the list of printers supported by PrinterDM, load the file *!PrinterDM.PrData* into Edit. As supplied by Acorn, the last printer currently listed under *Real printer definitions* has a printer number of 12. Assuming no others have been added, you can add printer number 13 as follows:

```
printer_name:    Canon BJ130 (360 by 360 dpi)
printer_number: 13

pxres:           360
pyres:           360
pxres_halftone: 360/8
pyres_halftone: 360/8

dump_depth:      48
interlace:       0
line_prologue:   "<28>CB<4><4>"
line_epilogue:   "<28>CJ<0><24>"
.....
```

To print in draft mode, add a further printer (number 14) as above, but with 360 altered to 180 in every case, dump depth of 24, and line prologue of "<28>CB<0><0>". See this month's *Into the Arc* for an explanation of the *PrData* file.

OVERTYPE/INSERT IN EDIT

Graham J. Wicks

Did you know that Shift/F1 toggles Edit between overtype and insert modes. This does not appear to be documented in the User Guide. What other goodies lurk in the familiar Desktop applications?

CMOS ADFS CONFIGURATION

Michael Spearpoint

Locations 135-137 in the CMOS RAM are described as for "ADFS use" in the PRM. The contents of these locations can be read by using OS_Byte 161, and altered using the *Configure command or by using OS_Byte 162. The bytes have the following function:

Byte	Bits	Function
135	0-2	Number of floppies (0-4)
	3-4	Number of hard discs (0-2)
136	0-1	Step rate, drive 0
	2-3	Step rate, drive 1
	4-5	Step rate, drive 2
	6-7	Step rate, drive 3
137		Number of ADFS buffers

The step rates in byte 136 are defined as:

Bit pattern	Rate in milliseconds
10	2
11	3
00	6
01	12

READING TEXT FILES

Mike Ironmonger

In RISC User Volume 3 Issue 2 there was a short article on *Readable 'Read Me's*, which detailed a method of outputting text files onto the full screen. The following alias is much simpler and easier to use:

```
*Set Alias$@RunType_FFF Echo|<22>|<0>|<14>|MType %0
```

After executing this a text file can be read simply by double-clicking on it. To use windows and colours simply include the appropriate VDU codes in the Echo command.

VALUES IN *KEY AND *ECHO

Alan Wrigley

*Key and *Echo (and many other functions) use an operating system routine called OS_GSTrans which recognises certain special characters in order to send values outside the printable character set to the output stream. If you enclose a string between angle brackets, it will be output as an integer value (if it is recognised as a number) rather than the string itself. To be recognised as a number, the string must start with a digit, with & for a hex number, or with *base_* where *base* specifies the number base in the range 2 to 36. An example (in binary) would be:

```
2_101011
```

This routine allows you to send control codes, for example, from within key definitions or *Echo statements. For example:

```
*Echo <22><12>
```

would set mode 12.

If the string cannot be recognised as a number as described above, a system variable of that name will be searched for. You will often find this in filenames, where an application sets up a system variable such as App$Dir to hold its pathname. The program accesses files using <App$Dir>, which OS_GSTrans will convert into the full pathname required.

PARAMETER SUBSTITUTION IN OBEY FILES

Glynn Clements

When an Obey file is run, each line of the file has any parameters substituted before the line is passed to the Command Line Interpreter (CLI). Parameters are represented by % followed by a

digit from 0 to 9, 0 referring to the first parameter and 9 referring to the tenth. Thus if an Obey file called Test contained the command:

```
Echo The second parameter was '%1'
```

then executing the file with parameters by typing:

```
Test Hello There World !!!
```

would result in the following line being printed on the screen:

```
The second parameter was 'There'
```

The %1 in the Obey file *Test* is replaced by the second parameter, *There*. Furthermore, %* followed by a digit will be replaced by all the parameters starting from the one specified, so if the Obey file *Test* contains the line:

```
Echo You typed 'Test %*0'
```

then typing:

```
Test Hello There World !!!
```

would result in:

```
You typed 'Test Hello There World !!!'
```

being printed on the screen. This time, the %*0 is replaced by all the parameters starting from the first.

However, this can cause problems when using commands like *Set*, for example, when a parameter definition is required as a parameter to another command. Suppose you wanted to set up an alias from an Obey file using:

```
Set Alias$RunType_FFF Print %0
```

When the Obey file is run, the %0 will be replaced by the first parameter, or a space if none is given. To get the *actual* string "%0" to appear in the alias definition, we must instead use:

```
Set Alias$RunType_FFF Print %%0
```

This time the %%0 will be replaced by %0, so that the alias becomes *Print* %0, which is what we want.

LOCAL VARIABLE QUIRKS

Lee Calcraft

If a variable is declared LOCAL to a particular procedure in a program, that variable is given an initial value of 0, or "" if it is a string variable. Thus the following will print the value zero when you might have expected a program error:

```
PROCA
END
:
DEFPROCA
LOCAL A
PRINT A
ENDPROC
```

Moreover, a global version of the variable is also created (providing that one does not already exist) when the LOCAL declaration is encountered. The value of this global variable is again 0 (or "" for a string variable). This can be confusing, especially during debugging. Remember too that if you test the value of such a variable, after Escaping from the program or after a program error, its value will depend on whether the error occurred inside or outside of the procedure in which it is declared LOCAL.

SWI "OS_PrettyPrint"

Lee Calcraft

This OS call, documented on page 185 of the PRM is used for neatly formatting text on the screen. It features word wrap, hard spaces, tabs and dictionary substitution (useful where space is at a premium). Moreover it is easily used from Basic.

For example, if you want to print text with word wrap (i.e. without splitting words across a new line), then this is by far the easiest way to do it. In the simplest case, you can supply the string to be printed as a string variable:

```
text$="Some text"+CHR$(9)+"ASCII 9 tab
s to the nearest multiple of 8 columns
"
SYS "OS_PrettyPrint",text$
```

Text is more usually supplied as a null terminated string whose pointer is given as the first parameter to the call.

```
DIM text% &100
text$="Some formatted text."+CHR$(13)+
"Next line etc..."+CHR$(0)
$text%=text$
SYS "OS_PrettyPrint",text%
```

In more general use the call is made with up to 3 parameters:

R0=pointer to null-terminated string to be printed
R1=pointer to dictionary (0 means use internal RISC OS dictionary)
R2=pointer to special strings to be used with the dictionary.

Special characters used in the string are as follows:

13	New line
9	tab to next multiple of 8 columns
31	hard space (i.e. pad character)
27	means use next byte to indicate which of 255 dictionary entries to substitute.

For example, try:

```
DIM R1 &20:$R1=CHR$27+CHR$23+CHR$0
SYS "OS_PrettyPrint",R1
```

This prints RISC OS dictionary entry 23 (since by not specifying R2 in this call it takes the value zero by default). The RISC OS dictionary is described on page 186 of the PRM. RU

!ArcScan

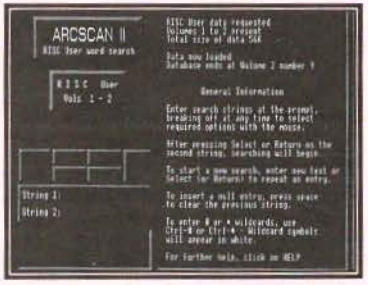
ArcScan II

★ Now caters for Volume Numbers up to 99
(see this month's magazine disc)

ArcScan II Contains the Following Databases:

RISC User Volumes 1 - 2
BEEBUG Volumes 1 - 8
The Indexes to the following Archimedes Acorn manuals:

- Basic User Guide (Arthur)
- Programmer's Reference Manual (Arthur)
- RISC OS User Guide
- RISC OS Basic Manual
- RISC OS Programmer's Reference Manual



ArcScan Features

Fast ARM Code searching
Mouse controlled
Runs from the Desktop
Keyword entry with selectable logic
Fully customisable
Extensive on-screen help
Hard copy options

Fully Customisable

A user-defined custom file allows easy customisation for other data.

For example:

1. If you need to know about Obey Files, enter the words 'obey', 'files' and click on the AND logic. All finds in RISC User will be instantly displayed. You can now call up the Acorn Manuals indexes and repeat the search to get further references.
2. To find the SWI name for SWI &400D4, select the new Programmers Reference Manual from the menu, enter "SWI &400D4", and the answer appears, complete with page references.

ArcScan II Disc + manual £14.95 members (£18.95 non-members) Code 0109A **ArcScan Upgrade** £7.95 members (£10.95 non-members) Code 0110A

Please add 60pp&p. For upgrade, please state month of purchase of RU Special Disc.....

Phone your order now on (0727) 40303 or send your cheque/postal order to the address below. Please quote your name and membership number. When ordering by Access, Visa or Connect, please quote your card number and the expiry date.

BEEBUG Ltd, 117 Hatfield Road, St Albans, Herts AL1 4JS. Telephone (0727) 40303.

Base
5

Base5 DBMS is a unique kind of database management system specifically developed for the Archimedes. Unique, because it offers a complete database language and library, able to work from within your Basic programs. No "Tricksy" code has been used so all Base5 programs are fully compatible with Basic compilers. The comprehensive documentation contains an extensive tutorial as well as a language reference. A number of databases and programs are also supplied as example material.
More modules are being developed all the time and will be available to registered users at preferential prices. Registered users will also enjoy ONE YEARS FREE technical support!

£ 69

Inclusive of VAT, Postage & Packing

Base5
P O Box 378
WOKING
Surrey GU21 4DF

Technical Queries

CREATING LARGE FILES

Dear Sir,

One of my frequently used programs which I run on my A440 creates two large files using OPENOUT and then BPUT. Recently, on running the program, I obtained the message "Compaction required" even though I had checked to see that sufficient space was available in advance. Is there a way to avoid this without having to reformat the disc to E format?

Dr.I.D.Entwistle

Certainly, reformatting your hard disc (or a floppy), to E format will completely avoid this problem, and others as well, and speed up disc access. If this is not possible, it is generally better to create any data file to the size required before you start using it. With OPENOUT the file is increased step by step, and the process insists on a contiguous area of memory to achieve this. Instead, use the *Create command (see the User Guide) to create the file, and replace OPENOUT with OPENUP to open the file ready for your data. This will also speed up file processing, as the file is created to its final size in one step, instead of repeatedly extending it by a small amount as the data is written to it.

ALLOCATING MEMORY TO APPLICATIONS

Dear Sir,

When starting some Archimedes applications, Logistix for example, it is necessary to use the Task Manager to set the 'Next' slot to maximum. Can this be done with something like the Automatic Configure utility from RISC User Volume 2 Issue 7?

Peter Clarke

The easiest way to control the amount of memory allocated to an application is to include the command *WimpSlot within the !Run file in its application directory. This file can be created (or edited) using Edit, and specifies the minimum and maximum memory that an application is given when it is started. If less than the minimum is available then the application cannot run. If the maximum is available, the application will grab it, but in most instances, once an application has been allocated its minimum requirement this is also the most that it needs to run, and both min and max are thus frequently specified to be the same. In any case, the amount of memory subsequently used by an application can change dynamically as the need arises, e.g. as a DTP document grows in size and complexity.

The format of the command is:

```
*WimpSlot -min aK -max bK
```

where 'a' and 'b' are the relevant values (see examples which appear quite frequently in RISC User).

Z88 TO ARC TRANSFER

Dear Sir,

Thank you for the article Arc to Z88 in RISC User Volume 3 Issue 7. I use Pipedream for the Archimedes and the PC Link pack with the Z88 filer supplied by Colton Software. However, I have not found it "a delight to use". Frequently the computer hangs during the transfer of data, and there have been times when Pipedream on the Archimedes "commits suicide" after an attempted file transfer.

The same has happened with the Patch program supplied on the RISC User disc, though other programs transfer properly. In every case a message "failed to connect to Z88" comes up. Can you suggest what might be wrong?

Kell Gatherer

When using the PC Link pack with the Z88, a "Failed to Synchronise with Z88" error sometimes occurs. You may have to resort to an alternative method of transfer, and in these circumstances the BEEBUG program *Talk*, which is included on this month's magazine disc, may prove to be more successful. It was originally written for the BBC/Master, but works equally well on the Arc.

The Arc should be configured with *Configure Baud 7 (9600 baud) and *Configure Data 4. The PANEL (Square S) on the Z88 must be set to 9600 baud with no parity and Xon/Xoff protocol. RU

ARE YOU GOOD ENOUGH?

As the leaders in software for the Archimedes range of computers, CLARES MICRO SUPPLIES are looking to extend our range even further. We are looking for people who are as excited by the Archimedes as we are.

If you have written any programs, completed or not, then we would like to hear from you.

If you have any ideas for programs and have the ability to execute the ideas then we want to hear from you.

If you have the ability to program the Archimedes but not the ideas to program then we want to hear from you.

Programs can be written in any language as long as they perform their stated task. Many of our programs contain large chunks of BASIC with ARM code in the areas that it is needed. BASIC on the Archimedes is a very powerful language and we do not attach any snob value to its use. If your program does what is meant to do then thats all we are interested in. Why not join the top team on the Archimedes. You get the support of our in-house team, privileged access through us to Acorn and invitations to our informal programmers seminars.

The most important point is that you will be earning top royalty rates of if you prefer we will purchase your program outright.

Please write, in confidence, to Mr. D. Clare at:

Clares Micro Supplies,
98 Middlewich Road,
Northwich,
CHESHIRE CW9 7DA

If you have a program either complete or in development then please enclose a copy for our evaluation.

To protect yourself we advise that you lodge a copy of the program with your bank or solicitor BEFORE you send us a copy. You can then prove that your program pre-dates anything that we have.

Act today and become part of the leading software team producing software for the worlds fastest micro.

Postbag

THE IMPORTANCE OF RISC OS AS A STANDARD

In Alan Wrigley's review of LinCad, the excuse given by Linear Graphics for not sticking to RISC OS is to keep functionality with IBM PC versions. This is quite ludicrous. Firstly, I work in a mixed PC/Arc environment, and it would be silly to expect a particular Arc application to fit to any non-standard IBM user interface. Secondly, customers with Arcs are unlikely to have PCs running the same software. One can only surmise that LinCad is producing a user interface which suits LinCad, not the customer. I for one will not recommend purchasing any non-RISC OS software unless there is no alternative. At least 50% of what makes the Arc better than the rest is RISC OS, so let's insist on it.

Ian Lynch

Alan Wrigley replies: "I think the point that Linear Graphics was trying to make is that in a classroom environment, it made sense (to Linear Graphics at least) that all manifestations of their software should appear to work in the same way, regardless of machine. I hope my review did not suggest that I supported this attitude, since I believe that all major applications should adhere to RISC OS guidelines. With a computer as advanced as the Archimedes the user has the right to expect that he does not have to re-learn to use it with each new package. Furthermore, if the Arc is ever to be taken seriously as a business machine, it must have such conformity. With the advent of powerful DTP packages, some people are beginning to compare the Arc with the Macintosh. However, no programmer would dream of writing a major piece of software for the Mac which did not conform to its standard interface."

WHAT IS 'LOW RADIATION'?

I would like to comment on your review of Taxan high-resolution monitors in the May issue of RISC User (Volume 3 Issue 6) regarding the matter of radiation.

I think the reviewer has slightly obscured things by lumping together X-rays and low frequency EM (electromagnetic) fields. The biological effects of the latter (if any) are on the verge of statistical detectability, but X-rays have clear effects and good dose-response data is available. Does anyone know how much X-radiation comes from an ordinary Taxan monitor, or whether the reduction in the low radiation models makes any difference?

Philip Draper

David Spencer has checked the facts with Taxan. The low radiation model has no effect on X-ray emission, but that model and the standard version meet European standards in this respect. The low-radiation model achieves a five-fold reduction in the strength of the electromagnetic field, and a twelve-fold reduction in the electrostatic potential (which is what attracts dust).

THE BENEFITS OF MEMORY UPGRADES

I have not seen any detailed measurements of the benefits of increasing the memory size of the Archimedes, so before having an extra 3Mbytes fitted to my A3000 I did a number of timed printing tests with Pipedream and Acorn DTP so that I could compare the results afterwards. Using a Star NL10 printer I obtained:

	1Mbyte	*4Mbyte*
Pipedream	*18m 18sec*	*5m 23sec*
Acorn DTP	*7m 25sec*	*6m 43sec*

The 4Mbyte machine was configured with 256K of font cache. The Pipedream file used fonts (the example 'Car Lovers' report supplied with Pipedream). The Acorn DTP document was an A4 letter, which was not even fully printed on the 1Mbyte machine.

So if you want to use fonts in Pipedream, or print more than one A4 page in ADTP the extra memory is essential.

B.Cocksedge

We would endorse Mr Cocksedge's remarks about the value of increasing your Arc's memory beyond 1Mbyte - 2Mbytes is entirely adequate for most applications, 4Mbytes represents the icing on the cake for most users, though 8Mbytes is also now possible. And, of course, there are many more benefits than speed increases of the kind described by Mr. Cocksedge. RU

RISC USER MEMBERSHIP

RISC User is available only on subscription at the rates shown below. Full subscribers to RISC User may also take out a reduced rate subscription to BEEBUG (the magazine for the BBC micro and Master series).

Subscription Rates	**RISC User**	**RISC User & BEEBUG**
UK, BFPO, Ch.Is	£16.90	£25.00
Rest of Europe & Eire	£24.00	£36.00
Middle East	£29.00	£43.00
Americas & Africa	£31.00	£46.00
Elsewhere	£34.00	£51.00

All subscriptions, including overseas, should be in pounds sterling. We will also accept payment by Connect, Access and Visa, and official UK orders are welcome.

Back Issues

We intend to maintain stocks of back issues. New subscribers can therefore obtain earlier copies to provide a complete set from Vol.1 Issue 1. Back issues cost £1.20 each (£1.60 for Volume 3.) You should also include postage as shown:

Post and Packing	**UK, BFPO, Ch.Is**	**Europe plus Eire**	**Elsewhere**
First Issue	60p	£1.00	£2.00
Each subsequent Issue	30p	50p	£1.00

MAGAZINE DISC

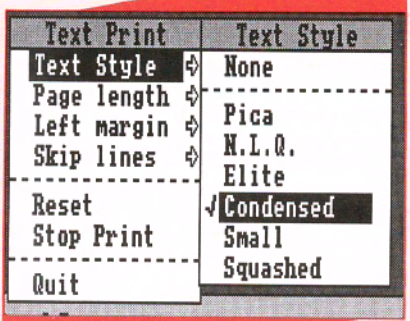
The programs from each issue of RISC User, together with a number of additional items, are included on a monthly 3.5" disc. This will be available to order, or you may take out a subscription to ensure that the disc arrives at the same time as the magazine.

Disc Subscription Rates	**UK**	**Overseas**
Single issue discs	£4.75	£4.75
Six months subscription	£25.00	£30.00
Twelve months subscription	£50.00	£56.00

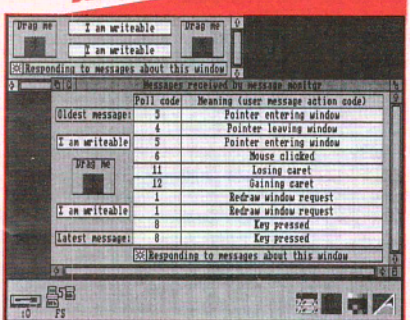
Disc subscriptions include postage, but you should add the appropriate rate (see above) per disc for individual orders.

RISC User & BEEBUG, 117 Hatfield Road, St Albans, Herts AL1 4JS.
Tel: St Albans (0727) 40303 Fax: (0727) 60263

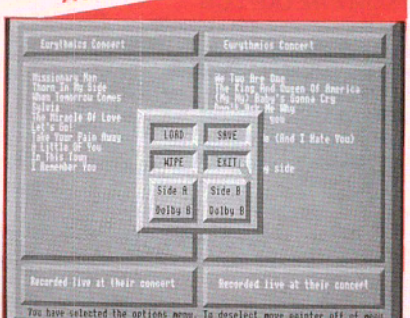
RISC USER MAGAZINE DISC CONTENTS



Background Text Printer



A Wimp Message Monitor



Audio Tape Inlay Creator

PROGRAMS LISTED IN RISC USER SEPTEMBER 1990

Background Text Printer
Use this handy Wimp application to print text files in the background while you continue with other tasks.

A Wimp Message Monitor
This Wimp application monitors the reason codes and their meanings for all current Wimp applications, including Itself.

Introducing C (Part 3)
The two example programs in C from this month in both source and compiled formats ready for instant running.

Assembler Workshop: Module-based Desktop Applications
A demonstration implementation of a Wimp application as a relocatable module, together with a fully commented source code version.

Mastering the Wimp (Part II, Menus continued)
This month's version of the Wimp demonstration program shows how to detect user menu choices, and to implement menu dialogue boxes.

ADDITIONAL PROGRAMS DESCRIBED IN THE MAGAZINE

Arc/IBM Disc Management
A program to examine both ADFS and IBM format discs, and to provide file transfer from one system to the other.

BONUS ITEMS

Audio Tape Inlay Creator
This program provides an easy-to-use screen for the creation, editing and printing of audio cassette inlays to keep track of all your recordings.

Playful Lamp Demo
This is a continuous animation created with Silicon Vision's SolidCAD and FilmMaker. A text file describing the construction of the animation is also included.

Selecting the CSD
This Wimp application sits on the icon bar and allows any Desktop file or directory to be used to select the Currently Selected Directory (CSD).

Poster Resources
Demo Draw files illustrating the features and effects that can be produced with Poster from 4mation, reviewed in this issue.

Z88 to Arc Transfer
A copy of the TALK program referred to in this month's Technical Queries for file transfer between Arc and Z88.

ArcScan Data
The ArcScan data files for this issue of RISC User and BEEBUG Vol.9 No.3. Also included is a file to be added to the ArcScan II application, allowing volume numbers up to 99 to be used.

Note: The simplest way of accessing any RISC User magazine disc (since Volume 3 Issue 1) is to double-click on the 'RU' icon in the directory viewer for the disc.

Beebug Outline Fonts

Pack 1

Beebug Outline Font Pack 1 provides a range of high quality outline fonts designed specifically for the Archimedes. Each font contains nearly 200 characters designed to produce the best quality output on the screen and printer.

A new 'prolog' file is supplied allowing the new typefaces to be printed on PostScript compatible printers. They are mapped as follows:

Paladin is a Palatino ® equivalent
SwissB is a Helvetica ® equivalent
SymbolB is a Symbol equivalent
Vogue is an AvantGarde ® equivalent

Beebug Outline Fonts are ideal for use with Desktop Publishing packages and Word Processors which use the Acorn Outline Font Manager.
Please note that the Outline Font Manager is supplied with the pack.

Font samples★ from Font Pack 1:

Paladin.Roman	The quick brown fox jumps over the lazy dog 1234567890 THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG
Paladin.Roman.Italic	*The quick brown fox jumps over the lazy dog 1234567890* *THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG*
Paladin.Bold	**The quick brown fox jumps over the lazy dog 1234567890** **THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG**
Paladin.Bold.Italic	***The quick brown fox jumps over the lazy dog 1234567890*** ***THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG***
SwissB	The quick brown fox jumps over the lazy dog 1234567890 THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG
SwissB.Oblique	*The quick brown fox jumps over the lazy dog 1234567890* *THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG*
SwissB.Bold	**The quick brown fox jumps over the lazy dog 1234567890** **THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG**
SwissB.Bold.Oblique	***The quick brown fox jumps over the lazy dog 1234567890*** ***THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG***
Vogue.Book	The quick brown fox jumps over the lazy dog 1234567890 THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG
Vogue.Book.Oblique	*The quick brown fox jumps over the lazy dog 1234567890* *THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG*
Vogue.Demi	**The quick brown fox jumps over the lazy dog 1234567890** **THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG**
Vogue.Demi.Oblique	***The quick brown fox jumps over the lazy dog 1234567890*** ***THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG***
SymbolB	!#∃%&()*+,–./0123456789:;<=>?≅ΑΒΧΔΕΦΓΗΙϑΚΛΜΝΟΠ _ ΘΡΣΤΥςΩΞΨΖ[∴]⊥_ αβχδεφγηιφκλμνοπθρστυϖωξψζ{|} ϒ′≤⁄∞♣♦♥♠↔↑→↓°±″≥×∂•÷≠≡≈↵ℵℑℜ℘⊗⊕Ø∩∪⊃⊇⊄⊂⊆∈∉∇ ®©™∏√¬∧∨⇔⇐⇑⇓◊〈®©™∑∫

★ *These fonts are true reproductions of Beebug Outline Fonts*

Stock Code 0111B **Price £54.50**

Further Font Packs (under development):

Font Pack 2 - contains **Bookman, Courier, Garamond** and **Chancery** equivalents
Font Pack 3 - contains **New Century Schoolbook, Optima, Times** and **Dingbats** equivalents

Beebug Ltd, 117 Hatfield Road, St. Albans, Herts AL1 4JS. Tel. (0727) 40303 Fax. (0727) 60263